Neonatal jaundice

Compiled Appendices

Table of contents

Appendix

A. Scope

1 Guideline title

Neonatal jaundice

1.1 Short title

Neonatal jaundice

2 Background

a) The National Institute for Health and Clinical Excellence ('NICE' or 'the Institute') has commissioned the National Collaborating Centre for Women's and Children's Health to develop a clinical guideline on the recognition and treatment of infants with neonatal jaundice for use in the NHS in England and Wales. This follows referral of the topic by the Department of Health (see appendix). The guideline will provide recommendations for good practice that are based on the best available evidence of clinical and cost effectiveness.

b) The Institute's clinical guidelines support the implementation of National Service Frameworks (NSFs) in aspects of care for which a Framework has been published. The statements in each NSF reflect the evidence that was used at the time the Framework was prepared. The clinical guidelines and technology appraisals published by NICE after an NSF has been issued will have the effect of updating the Framework.

c) NICE clinical guidelines support the role of healthcare professionals in providing care in partnership with patients, taking account of their individual needs and preferences, and ensuring that patients (and their carers and families, if appropriate) can make informed decisions about their care and treatment.

3 Clinical need for the guideline

a) Jaundice is one of the most common conditions requiring medical attention in newborn babies. Approximately 60% of term and 80% of preterm babies develop jaundice in the 1st week of life, and about 10% of breast fed babies are still jaundiced at 1 month of age. In most infants with jaundice there is no underlying disease, and this early jaundice (termed 'physiological jaundice') is generally harmless.

b) Neonatal jaundice refers to the yellow colouration of the skin and the sclera of newborn babies that result from accumulation of bilirubin in the skin and mucous membranes. This is associated with a raised level of bilirubin in the body, a condition known as hyperbilirubinaemia.

c) Bilirubin is a breakdown product of the red cells in the blood. Red cell breakdown produces unconjugated (or 'indirect') bilirubin, which is partly bound to albumin. Normally this is metabolised in the liver to produce conjugated (or 'direct') bilirubin, which then circulates through the gut and is excreted in the urine and the stool.

d) Newborn babies have more circulating red cells and a shortened red cell lifespan, so the bilirubin levels are higher than they are later in life. The breakdown and excretion of bilirubin is also slower. Thus degrees of hyperbilirubinaemia occurring as a result of this normal physiological mechanism are common in newborn babies and usually benign (harmless) compared with adult levels.

e) Breast fed infants are more likely to develop physiological jaundice within the 1st week of life. Prolonged jaundice, that is jaundice persisting beyond the first 14 days, is also seen more commonly in these infants. The mechanism for this 'breast milk jaundice syndrome' is still not completely understood and the condition appears to be generally harmless.

f) Jaundice may also have other, non-physiological, causes, including blood group incompatibility (Rhesus, ABO or similar problems), other causes of haemolysis, sepsis, bruising and metabolic disorders. Gilbert's and Crigler–Najjar syndromes are rare causes of neonatal jaundice. Deficiency of a particular enzyme, glucose-6-phosphate-dehydrogenase (G-6-PD), can cause severe neonatal jaundice. G-6-PD deficiency is more common in certain ethnic groups and runs in families. Congenital obstruction and deformities affecting the biliary system, such as in the condition known as biliary atresia, cause an obstructive jaundice associated with conjugated hyperbilirubinaemia. This condition needs specialist management and surgical treatment.

g) In young babies, unconjugated bilirubin can penetrate across the membrane that lies between the brain and the blood (the blood-brain barrier). Unconjugated bilirubin is potentially toxic to neural tissue (brain and spinal cord) because it acts as a 'cell poison' slowing essential processes. Entry of unconjugated bilirubin into the brain can cause both short-term and long-term neurological dysfunction. Acute problems include lethargy, abnormal muscle tone, irritability, temporary cessation of breathing (apnoea) and convulsions. This presentation is known as acute bilirubin encephalopathy. This deposition of bilirubin causes a yellow staining of a particular part of the deep neural tissue (the deep grey matter) within the brain; this staining is referred to as 'kernicterus'. The term kernicterus is also used to denote a group of signs typical of chronic bilirubin encephalopathy. These signs include athetoid cerebral palsy, hearing loss, visual and dental problems. The exact level of bilirubin that is likely to cause neurotoxicity in any individual baby varies, and depends on the interplay of multiple factors that probably include acidosis, postnatal age, rate of rise of bilirubin level, serum albumin concentration, and whether the baby has another illness at the time (including infection).

h) Although neonatal jaundice is very common, kernicterus is very rare. There is a poor correlation between levels of bilirubin in the body and the clinical features of bilirubin encephalopathy. There seems to be tremendous variability in susceptibility towards bilirubin encephalopathy among newborns for a variety of unexplained reasons. However, there are certain factors that probably influence the passage of bilirubin into the brain and hence increase the risk of acute bilirubin encephalopathy. These include

dehydration, prematurity, respiratory distress, sepsis, hypoxia, seizures, acidosis and hypoalbuminaemia. The rate of rise of the level of bilirubin is probably important, hence the increased risk of kernicterus in babies with haemolytic disease such as G-6-PD deficiency or Rhesus haemolytic disease.
i) The correlation between actual bilirubin levels and kernicterus is poor for the various reasons discussed above in 3 g and h. Kernicterus in healthy term babies with none of the factors (as described above) is virtually unknown below a threshold level of 425 micromoles of bilirubin per litre of serum, but the number of cases rises above this threshold level and the risk of kernicterus is greatly increased in full term newborns with bilirubin levels above 515 micromol/litre. Kernicterus is also known to occur at lower levels of bilirubin in full term babies who have any of the factors described in 3 h.

j) Levels of bilirubin can be controlled by placing the baby under a lamp emitting light in the blue spectrum; this is known as phototherapy. Light energy in the appropriate part of the spectrum converts the bilirubin in the skin to a harmless form that can be excreted in the urine. Phototherapy has proved a very efficient safe and effective treatment for jaundice in newborns, reducing the need to perform an exchange transfusion of blood (the only other means of removing bilirubin from the body).

k) Clinical recognition and assessment of jaundice can be difficult. This is particularly the case in babies with darker skin. Once the diagnosis is made, there is uncertainty about when to treat raised bilirubin levels and there are variations in the use of phototherapy, exchange transfusion and other treatments. There is a need for more uniform, evidence-based practice, and for more widespread consensus-based practice in areas lacking evidence.

4 The guideline

a) The guideline development process is described in detail in two publications that are available from the NICE website (see 'Further information'). 'The guideline development process: an overview for stakeholders, the public and the NHS' describes how organisations can become involved in the development of a guideline. 'The guidelines manual' provides advice on the technical aspects of guideline development.

b) This document is the scope. It defines exactly what this guideline will (and will not) examine, and what the guideline developers will consider. The scope is based on the referral from the Department of Health (see appendix).

c) The areas that will be addressed by the guideline are described in the following sections.

4.1 Population

4.1.1 Groups that will be covered

a) All newborn infants (both term and preterm) from birth to 28 days.

b) Special attention will be given to the recognition and management of neonatal jaundice in babies with darker skin.

4.1.2 Groups that will not be covered

a) Babies with jaundice that lasts beyond the first 28 days.

b) Babies with jaundice that requires surgical treatment to correct the underlying cause.

c) Management of babies with conjugated hyperbilirubinaemia.

4.2 Healthcare setting

a) The guideline will cover management in primary (including community care) and secondary care. Guidance regarding tertiary referral will also be included.

4.3 Clinical management

a) Identification of factors that increase the risk of kernicterus in a baby with jaundice

b) Recognition and management in primary care (includes community care).
Role and timing of assessment in primary care.
Estimation of hyperbilirubinaemia and its management.
Management at home, in the community and after discharge.
Indications for referral to secondary care

c) Recognition and management in secondary care.

• Assessment in secondary care.

• Investigations including:
bilirubin – components and methods of estimation
other relevant haematological and biochemical tests
urine tests
screening for metabolic disorders
end tidal carbon monoxide concentration
• Timing of lab investigations including point of care testing. Indications for referral to tertiary care.

d) Treatment of hyperbilirubinaemia.
Interpretation of bilirubin levels and use of nomograms.
Phototherapy (various modalities).
Blood exchange transfusion.
Other treatment modalities.
Role of nutritional support and rehydration.

e) Outcomes that will be considered:
• major outcomes:
mortality
morbidity, seizures
neurological complications (immediate, short-term and long-term)
impact on resource use and costs

• other outcomes:
auditory, visual and other non-neurological complications

hospital admission (duration, frequency, acquired infections)
effect on maternal infant bonding, breast feeding and family bonding

f) Information and support that should be given to parents and carers:
at the time of initial presentation
after diagnosis and during management
about long-term effects, including significant morbidities and functional outcome.

g) Note that guideline recommendations will normally fall within licensed indications; exceptionally and only if clearly supported by evidence, use outside a licensed indication may be recommended. The guideline will assume that prescribers will use the summary of product characteristics to inform their decisions for individual patients.

h) The guideline development group will take reasonable steps to identify ineffective interventions and approaches to care. If robust and credible recommendations for re-positioning the intervention for optimal use, or changing the approach to care to make more efficient use of resources can be made, they will be clearly stated. If the resources released are substantial, consideration will be given to listing such recommendations in the 'Key priorities for implementation' section of the guideline.

4.4 Status

4.4.1 Scope

This is the final scope.

Related NICE guidance

• Diabetes in pregnancy: management of diabetes and its complications from pre-conception to the postnatal period. NICE clinical guideline 63. Available from www.nice.org.uk/CG063

• Intrapartum care: care of healthy women and their babies during childbirth. NICE clinical guideline 55. Available from www.nice.org.uk/CG055

• Routine postnatal care of women and their babies. NICE clinical guideline 37. Available from www.nice.org.uk/CG037

• Antenatal care: routine care for the healthy pregnant woman. NICE clinical guideline 6. Available from www.nice.org.uk/CG006

4.4.2 Guideline

The development of the guideline recommendations will begin in April 2008.

5 Further information

Information on the guideline development process is provided in:
• 'The guideline development process: an overview for stakeholders, the public and the NHS'

• ‘The guidelines manual’.

These are available as PDF files from the NICE website (www.nice.org.uk/guidelinesmanual). Information on the progress of the guideline will also be available from the website.

Appendix: Referral from the Department of Health

The Department of Health asked NICE:

‘To prepare a clinical guideline on the recognition and treatment decisions of babies who are jaundiced.’

Appendix

B. Declarations of interest

This appendix includes all interests declared on or before 28 January 2010.

GDG members

Cristiana Aride
No interests declared

Jeffery Barron
No interests declared

Yvonne Benjamin
No interests declared

Sally Cottrell
No interests declared

Karen Ford
No interests declared

Kevin Ives
Personal pecuniary interest

Receives medico-legal instructions from solicitors acting for Claimants and Defendants to write expert reports in cases of litigation involving jaundice mediated brain injury in the newborn (kernicterus).

Personal non-pecuniary interest

Member of the Neonatal Society
Member of the British Association of Perinatal Medicine
Fellow of the Royal College of Paediatrics and Child Health
Published on Neonatal Jaundice, including a chapter in *Rennie and Roberton's Textbook of Neonatology*, Third and Fourth Editions, Churchill Livingstone, 1999, 2005.

Maria Jenkins
No interests declared

Alison Johns
No interests declared

Donal Manning
Personal non-pecuniary interest

Published a peer-reviewed perspective in *Archives of Disease in Childhood* 2009, in which the opinions expressed were formed by personal knowledge of, and evidence review of, neonatal jaundice.

Farrah Pradhan
No interests declared

Janet Rennie
Personal pecuniary interest

Payment received from the Legal Aid Board and the National Health Service Litigation Authority for independent expert medico legal reports for civil proceedings in cases of kernicterus. This work is undertaken outside of NHS time.

Personal non-pecuniary interest

Conducted research survey on the management of neonatal jaundice in the UK (work was done and submitted before accepting the post of Chair) published in the *Archives of Disease in Childhood* 2009. No funding or grant was received for this work.

Debra Teasdale
No interests declared

NCC-WCH staff and contractors

M Qutayba Almerie
No interests declared

Shona Burman-Roy
No interests declared

Katherine Cullen
No interests declared

Rajesh Khanna
No interests declared

Hannah Rose Douglas
No interests declared

Paul Jacklin
No interests declared

Juliet Kenny
No interests declared

Rosalind Lai
No interests declared

Hugh McGuire
No interests declared

Kristina Pedersen
No interests declared

Edmund Peston
No interests declared

Stephen Murphy
No interests declared

Manveet Patel
No interests declared

Itrat Iqbal
No interests declared

Jay Bannerjee
No interests declared

Carolina Ortega
No interests declared

Anuradha Sekhri
No interests declared

Martin Whittle
Personal pecuniary interests

Adviser to National Screening Committee in relation to obstetric ultrasound services

External advisers

None

Appendix

C. BiliWheel

BiliWheel

Currently jaundice is noted by visual inspections of the baby and treatment decisions are made based on this. On reviewing the evidence we note that visual inspection of a baby by the parent, health visitor or midwife can determine the presence of jaundice in most cases but it is not an accurate method for determining the severity of jaundice. In this situation it is essential to measure the bilirubin accurately and interpret this in relation to the baby's postnatal age in hours. Errors are frequently made in calculating a baby's age which leads to delays in recognising the severity of the jaundice and treatment.

The BiliWheel was inspired by discussions within the Guideline Development Group and is a handy pocket-sized device (diameter 120mm) designed to help health visitors and community midwives calculate a baby's age in hours and determine the severity of visible jaundice. It is based on the concept of a gestation wheel which all midwives and community health visitors are familiar with.

Using the BiliWheel the community health visitor or community midwife will be able to position the '0' hour mark on the outer disk (which is 0— 168 hours) to the time/day of birth on the inner disk (divided into seven days and then hourly intervals) and read the age in hours at the current time. For example; it is difficult to quickly and accurately mentally calculate the postnatal age of a baby whose bilirubin has just been measured at 6.30am on a Monday and who was born at 7.45pm on the previous Friday, and a midwife may see several jaundiced babies each day.

Once the baby's age has been determined the health visitor / community midwife will use the reverse side of the BiliWheel to interpret the baby's bilirubin level. The pointer on the second outer disk is moved to the age in hours on the inner wheel and a window will show 5 threshold bilirubin levels corresponding to 5 stepped interventions.

The GDG anticipates that the BiliWheel will:

- help to avoid delays in treatment
- help to reduce readmission rates for mothers and babies
- raise awareness of key issues relating to the management of jaundice with community based health care professionals
- support implementation of the guideline

Data thresholds have been taken from Table 1 (see - section 6 Formal Assessment) and we approved by stakeholders at consultation. A prototype of the BiliWheel has been developed and a field test to evaluate its utility is being planned jointly between the NCC-WCH and the NICE guideline implementation team.

Appendix

D. Registered stakeholder organisations

This appendix includes a list of all registered stakeholders at the time of submission for factual accuracy check (2nd February 2010.). The most current list of registered stakeholders is available on the NICE website.

Abbott Laboratories Limited
Alder Hey Children's NHS Foundation Trust
Association for Clinical Biochemistry
Association of Breastfeeding Mothers
Association of Clinical Biochemists, The
Association of the British Pharmaceuticals Industry (ABPI)
Birmingham Womens NHS Trust
BLISS - the premature baby charity
Bolton Council
Breastfeeding Network, The
Brighton and Sussex University Hospitals Trust
Brighton and Sussex University Hospitals Trust
British Dietetic Association
British National Formulary (BNF)
British Nuclear Medicine Society
British Nuclear Medicine Society
British Nuclear Medicine Society
British Nuclear Medicine Society
British Society for Haematology
British Society of Paediatric Gastroenterology, Hepatology & Nutrition (BSPGHAN)
Brook London
Calderdale PCT
Cambridge University Hospitals NHS Foundation Trust (Addenbrookes)
Care Quality Commission (CQC)
Central Medical Supplies Ltd
Children's Liver Disease Foundation
Cochrane Pregnancy & Childbirth Group
Commission for Social Care Inspection
Connecting for Health
Countess of Chester Hospital NHS Foundation Trust
Cytyc UK Limited
Department for Communities and Local Government
Department of Health
Department of Health Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI)
Department of Health, Social Services & Public Safety, Northern Ireland (DHSSPSNI)
Derbyshire Mental Health Services NHS Trust

Det Norske Veritas - NHSLA Schemes
Diabetes UK
Draeger Medical

EGAOH

Epsom & St Helier University Hospitals NHS Trust
Evidence based Midwifery Network
Gloucestershire PCT
Harrogate and District NHS Foundation Trust
Heart of England NHS Foundation Trust
Imperial College Healthcare NHS Trust
Independent Midwives UK
Insitute of Biomedical Science
Inspiration Healthcare Ltd
Institute of biomedical Science
King's College Hospital NHS Foundation Trust

Kingston Hospital NHS Trust

La Leche League GB
Leeds PCT
Liverool Women's NHS Foundation Trust
Liverpool Womens NHS Foundation Trust
Luton & Dunstable Hospital NHS Foundation Trust
Maternity Health Links
Medicines and Healthcare Products Regulatory Agency (MHRA)

Mid and West Regional Maternity Service Liasion Committe

MIDIRS (Midwives Information & Resource Service)
Ministry of Defence (MoD)
National Childbirth Trust

National Forum of LSA Midwifery Officers (UK)

National Patient Safety Agency (NPSA)
National Screening Committee
Natus Medical Incorporated
NCC - Cancer
NCC - Mental Health
NCC - National Clinical Guidance Centre (NCGC)
NCC - Women & Children
Neonatal & Paediatric Pharmacists Group (NPPG)
Neonatal & Paediatric Pharmacists Group (NPPG)
NETSCC, Health Technology Assessment
Newham University Hospital NHS Trust
NHS Bedfordshire
NHS Bournemouth and Poole

NHS Clinical Knowledge Summaries Service (SCHIN)

NHS Direct
NHS Isle of Wight
NHS Islington
NHS Kirklees
NHS Plus
NHS Quality Improvement Scotland
NHS Sheffield
NICE - CPHE

NICE - Guidelines Coordinator - for info
NICE - Guidelines HE for info
NICE - IMPLEMENTATION CONSULTANT Region - East
NICE - IMPLEMENTATION CONSULTANT - Region London/SE
NICE - IMPLEMENTATION CONSULTANT Region NW & NE
NICE - IMPLEMENTATION CONSULTANT Region West Midlands
NICE - IMPLEMENTATION CO-ORDINATION for info
NICE - Technical Appraisals (Interventional Procedures) FOR INFO
North Tees and Hartlepool Acute Trust
North Tees and Hartlepool Acute Trust
North Tees and Hartlepool Acute Trust
North Tees PCT
North Trent Neonatal Network
North West London Perinatal Network
North Yorkshire and York PCT
Northwick Park and St Mark's Hospitals NHS Trust
Nottingham University Hospitals NHS Trust
Oxford John Radcliffe NHS Trust
Patients Council
Pennine Acute Hospitals NHS Trust
PERIGON Healthcare Ltd
Philips Healthcare

Public Health North East

Public Wales NHS Trust
Queen Mary's Hospital NHS Trust (Sidcup)
RCM Consultant Midwives Group
Royal Brompton & Harefield NHS Trust
Royal College of General Practitioners
Royal College of Midwives
Royal College of Midwives
Royal College of Nursing
Royal College of Obstetricians and Gynaecologists
Royal College of Paediatrics and Child Health
Royal College of Pathologists
Royal College of Physicians London
Royal College of Radiologists
Royal Devon and Exeter NHS Foundation Trust
Royal Society of Medicine
Salford Royal Hospitals Foundation NHS Trust
Sandwell & West Birmingham Hospital NHS Trust
Sandwell PCT
Sandwell PCT
Scottish Intercollegiate Guidelines Network (SIGN)
Sheffield Children's NHS Foundation Trust
Sheffield PCT
Sheffield Teaching Hospitals NHS Foundation Trust
Social Care Institute for Excellence (SCIE)
Southampton University Hospitals NHS Trust
St Richards Hospital

UK National Screening Committee

UNICEF Baby Friendly Initiative
United Lincolnshire Hospitals NHS Trust

University Hospitals Bristol NHS Foundation Trust
University of York
Welsh Assembly Government
Welsh Scientific Advisory Committee (WSAC)

West Hertfordshire PCT & East and North Hertfordshire PCT

West Midlands SHA
Western Cheshire Primary Care Trust
Western Health and Social Care Trust
Wirral Hospital Acute Trust

York NHS Foundation Trust

Yorkshire and the Humber LSA

Appendix

E. Clinical questions

I. RECOGNITION

Q1. Which factors affect the relationship between neonatal hyperbilirubinaemia and kernicterus or other adverse outcomes (neurodevelopmental, auditory)?

i) Factors which can be identified before birth and at birth/initial assessment (e.g gestational age, ethnicity, history of previous baby treated for hyperbilirubinaemia)

ii) Factors which can be identified during further testing or formal assessment (e.g sepsis, acidosis)

Q2. What is the best method of recognizing hyperbilirubinaemia?

i) What is the accuracy of following tests in recognising neonatal hyperbilirubinaemia at the primary and secondary level? **(TSB as the reference standard for all tests)**

a) Clinical history and examination
b) Urine/stool examination
c) Icterometer
d) Transcutaneous bilirubin levels

ii) For home visits – timing, frequency of testing

iii) by parents/carers.

Q3. When should a baby with hyperbilirubinaemia be referred for further testing or formal assessment?

i) What are the indications for further testing/formal assessment in a baby with neonatal hyperbilirubinaemia?

ii) When should this assessment be carried out?

II. DIAGNOSIS

Q4. What should be included in a formal assessment of a baby with neonatal hyperbilirubinaemia?

i) What are the elements of a formal assessment in a baby with neonatal hyperbilirubinaemia?

a) Clinical examination
b) Total and split bilirubin
c) Blood tests – blood grouping, G6PD levels, haematocrit,
d) Urine tests
e) Biochemical tests (bilirubin/albumin ratio, other relevant tests)

ii) What is the clinical and cost effectiveness of the tests carried out during formal assessment?

Q5. How useful are the following tests in predicting neonatal hyperbilirubinaemia?

a) Cord bilirubin levels
b) Transcutaneous bilirubin levels
c) Timed S. Bilirubin levels
d) End tidal CO levels
e) Nomograms
f) Risk index assessment

i) What is the accuracy of these tests in predicting neonatal hyperbilirubinaemia?

ii) What is their effectiveness (clinical & cost) in predicting hyperbilirubinaemia and preventing morbidity/mortality?

III. MANAGEMENT

Q6. Phototherapy

i) How effective is phototherapy?

ii) What is the best modality of giving phototherapy (clinical & cost-effectiveness)?

a) Conventional phototherapy (single, double or multiple phototherapy)
b) Sunlight
c) Fibreoptic phototherapy (biliblankets, bilibeds and other products)

iii) What are the criteria/indications for starting and stopping phototherapy in babies with neonatal hyperbilirubinaemia?

iv) What is the correct procedure of giving phototherapy?

Focus on the method of feeding/types of feed, incubator/bassinet care, effect of intermittent vs. constant method on maternal-infant bonding, parental anxiety

Q7. Is it beneficial to give additional fluids (cup feeds, fluids) during treatment with phototherapy?

What is the effectiveness of nutritional support and/or rehydration during treatment with phototherapy in babies with neonatal hyperbilirubinaemia?

a) Oral – top milk feeds by bottle/cup/spoon or other liquids (water/juice)
b) Parenteral – IVF

Q8. Exchange transfusion

i) How effective is exchange transfusion?

ii) What is the best method (single volume vs. double volume exchange)?

iii) What are the criteria/indications for carrying out an exchange transfusion?

Q9. What are the other ways of treating hyperbilirubinaemia? Are they effective?

What is the effectiveness of the following interventions in treating neonatal hyperbilirubinaemia/preventing kernicterus?

a) Metalloporphyrins
b) Gammaglobulins

c) Drugs (phenobarbitol, clofibrate, cholestyramine)
d) Agar, charcoal
e) Suppositories, other rectal modes of treatment
f) Complementary/alternative medicines (Chinese herbal remedies like Yin-chin)

IV. MONITORING & FOLLOW-UP

Q10. How to monitor a baby with jaundice?

i) What are the appropriate criteria for monitoring (timing, frequency) of babies with jaundice who are at lower risk of developing neonatal hyperbilirubinaemia/kernicterus?

ii) What are the appropriate criteria for monitoring (timing, frequency) of babies diagnosed with neonatal hyperbilirubinaemia who do not require immediate treatment?

Q11. When to discharge a baby treated for hyperbilirubinaemia? What follow-up is required?

i) What is the appropriate criterion for discharge of babies treated for neonatal hyperbilirubinaemia?

ii) What is the appropriate timing/frequency of follow-up?

V. INFORMATION

Q13. What information and support should be given to parents/carers of babies with neonatal hyperbilirubinaemia?

a) At the time of birth
b) At the time of recognition of jaundice (FOR ALL BABIES)
c) At the time of formal assessment/diagnosis
d) During monitoring
e) During treatment with phototherapy and other interventions
f) At discharge and follow-up

Appendix

F. Search strategies

Question: Recognizing jaundice and predicting hyperbilirubinaemia

Ovid MEDLINE 1950 to April Week 2 2008

JAUN_recognise_predict_medline_230408

#	Searches	Results
1	INFANT, PREMATURE/	31751
2	preterm$.tw.	28005
3	INFANT, NEWBORN/	412490
4	(newborn$ or neonate$).tw.	134938
5	BLOOD GROUP INCOMPATIBILITY/	4748
6	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY/	3708
7	or/1-6	475270
8	HYPERBILIRUBINEMIA/	3350
9	HYPERBILIRUBINEMIA, NEONATAL/	139
10	hyperbilirubin?emia$.ti.	2141
11	bilirubin?emia$.ti.	148
12	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	273
13	exp JAUNDICE/	9646

14 jaundice$.ti.	9495
15 KERNICTERUS/	876
16 kernicterus$.ti.	358
17 or/8-16	19912
18 DIAGNOSIS/	15621
19 (prediction or predicting or recogniz$ or detection).ti.	179778
20 history.ti.	47128
21 PHYSICAL EXAMINATION/	23129
22 ((clinical$ or visual$ or physical$) adj3 examin$).tw.	72628
23 SKIN PIGMENTATION/	3966
24 ((skin or urine or stool$) adj3 colo?r$).tw.	2521
25 ((urine or stool$) adj3 examin$).tw.	3883
26 BILIRUBIN/bl [Blood]	11105
27 UMBILICAL CORD/	7145
28 FETAL BLOOD/	20781
29 BLOOD GROUP ANTIGENS/	14212
30 COOMBS' TEST/	3929
31 ((coomb$ or antiglobulin$) adj3 test$).tw.	2462
32 ((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	19944
33 transcutaneous$.tw.	8166
34 bilirubinomet$.tw.	140
35 icteromet$.tw.	29
36 (jaundice?met$ or jaundice met$).tw.	130
37 CARBON MONOXIDE/	11864

38	end tidal.tw.	5796
39	etco.tw.	141
40	NOMOGRAMS/	310
41	nomogram$.tw.	2996
42	(bilirubin$ adj3 percentile$).tw.	9
43	(hour$ adj3 bilirubin$).tw.	81
44	RISK ASSESSMENT/	89761
45	(risk$ adj3 (assess$ or index or model$)).tw.	37348
46	(total adj3 serum adj3 bilirubin$).tw.	1227
47	(serum adj3 bilirubin$ adj3 level$).tw.	1785
48	tsb.tw.	489
49	or/18-48	541944
50	and/7,17,49	1741

EBM Reviews - Cochrane Central Register of Controlled Trials 1st Quarter 2008

JAUN_recognise_predict_cctr_230408

#	Searches	Results
1	INFANT, PREMATURE/	1658
2	preterm$.tw.	3020
3	INFANT, NEWBORN/	8235
4	(newborn$ or neonate$).tw.	4126

5	BLOOD GROUP INCOMPATIBILITY/	41
6	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY/	25
7	or/1-6	11232
8	HYPERBILIRUBINEMIA/	58
9	HYPERBILIRUBINEMIA, NEONATAL/	6
10	hyperbilirubin?emia$.ti.	146
11	bilirubin?emia$.ti.	4
12	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
13	exp JAUNDICE/	245
14	jaundice$.ti.	191
15	KERNICTERUS/	2
16	kernicterus$.ti.	3
17	or/8-16	525
18	DIAGNOSIS/	26
19	(prediction or predicting or recogniz$ or detection).ti.	2758
20	history.ti.	707
21	PHYSICAL EXAMINATION/	482
22	((clinical$ or visual$ or physical$) adj3 examin$).tw.	4706
23	SKIN PIGMENTATION/	106
24	((skin or urine or stool$) adj3 colo?r$).tw.	133
25	((urine or stool$) adj3 examin$).tw.	223
26	BILIRUBIN/bl [Blood]	472
27	UMBILICAL CORD/	109
28	FETAL BLOOD/	398

29	BLOOD GROUP ANTIGENS/	14
30	COOMBS' TEST/	17
31	((coomb$ or antiglobulin$) adj3 test$).tw.	31
32	((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	548
33	transcutaneous$.tw.	1256
34	bilirubinomet$.tw.	6
35	icteromet$.tw.	0
36	(jaundice?met$ or jaundice met$).tw.	17
37	CARBON MONOXIDE/	258
38	end tidal.tw.	1265
39	etco.tw.	34
40	NOMOGRAMS/	4
41	nomogram$.tw.	143
42	(bilirubin$ adj3 percentile$).tw.	0
43	(hour$ adj3 bilirubin$).tw.	24
44	RISK ASSESSMENT/	2723
45	(risk$ adj3 (assess$ or index or model$)).tw.	1532
46	(total adj3 serum adj3 bilirubin$).tw.	104
47	(serum adj3 bilirubin$ adj3 level$).tw.	176
48	tsb.tw.	22
49	or/18-48	17006
50	and/7,17,49	134

CDSR, DARE

JAUN_recognise_predict_cdsrdare_230408

#	Searches	Results
1	INFANT, PREMATURE.kw.	181
2	preterm$.tw.	519
3	INFANT, NEWBORN$.kw.	541
4	(newborn$ or neonate$).tw.	890
5	BLOOD GROUP INCOMPATIBILIT$.kw.	5
6	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENC$.kw.	0
7	or/1-6	1028
8	HYPERBILIRUBINEMIA.kw.	3
9	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
10	hyperbilirubin?emia$.ti.	2
11	bilirubin?emia$.ti.	0
12	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	5
13	JAUNDICE.kw.	13
14	jaundice$.ti.	10
15	KERNICTERUS.kw.	1
16	kernicterus$.ti.	0
17	or/8-16	18
18	DIAGNOSIS.kw.	821
19	(prediction or predicting or recogniz$ or detection).ti.	69
20	history.ti.	22

21 PHYSICAL EXAMINATION$.kw.	56
22 ((clinical$ or visual$ or physical$) adj3 examin$).tw.	931
23 SKIN PIGMENTATION.kw.	3
24 ((skin or urine or stool$) adj3 colo?r$).tw.	25
25 ((urine or stool$) adj3 examin$).tw.	13
26 BILIRUBIN.kw.	4
27 UMBILICAL CORD.kw.	7
28 FETAL BLOOD.kw.	2
29 BLOOD GROUP ANTIGEN$.kw.	0
30 COOMBS' TEST.kw.	0
31 ((coomb$ or antiglobulin$) adj3 test$).tw.	4
32 ((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	121
33 transcutaneous$.tw.	195
34 bilirubinomet$.tw.	0
35 icteromet$.tw.	0
36 (jaundice?met$ or jaundice met$).tw.	1
37 CARBON MONOXIDE.kw.	5
38 end tidal.tw.	10
39 etco.tw.	1
40 NOMOGRAM$.kw.	0
41 nomogram$.tw.	6
42 (bilirubin$ adj3 percentile$).tw.	0
43 (hour$ adj3 bilirubin$).tw.	2
44 RISK ASSESSMENT$.kw.	213

45	(risk$ adj3 (assess$ or index or model$)).tw.	1095
46	(total adj3 serum adj3 bilirubin$).tw.	13
47	(serum adj3 bilirubin$ adj3 level$).tw.	21
48	tsb.tw.	1
49	or/18-48	2884
50	and/7,17,49	9

EMBASE 1980 to 2008 Week 16

JAUN_recognise_predict_embase_230408

#	Searches	Results
1	PREMATURITY/	27937
2	preterm$.tw.	25261
3	NEWBORN/	174081
4	(newborn$ or neonate$).tw.	94136
5	exp BLOOD GROUP INCOMPATIBILITY/	2541
6	GLUCOSE 6 PHOSPHATE DEHYDROGENASE DEFICIENCY/	1474
7	or/1-6	235354
8	HYPERBILIRUBINEMIA/	5333
9	hyperbilirubin?emia$.ti.	1025
10	bilirubin?emia$.ti.	15
11	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	237
12	JAUNDICE/	9237

13 NEWBORN JAUNDICE/	1660
14 jaundice$.ti.	3561
15 KERNICTERUS/	683
16 kernicterus$.ti.	146
17 or/8-16	17140
18 DIAGNOSIS/	465073
19 (prediction or predicting or recogniz$ or detection).ti.	141323
20 HISTORY/	16157
21 FAMILY HISTORY/	24813
22 history.ti.	24050
23 PHYSICAL EXAMINATION/	56183
24 ((clinical$ or visual$ or physical$) adj3 examin$).tw.	60247
25 SKIN PIGMENTATION/	4446
26 ((skin or urine or stool$) adj3 colo?r$).tw.	2234
27 ((urine or stool$) adj3 examin$).tw.	2748
28 BLOOD LEVEL/	36543
29 BILIRUBIN BLOOD LEVEL/	6158
30 CORD SERUM/	234
31 UMBILICAL CORD BLOOD/	9443
32 FETUS BLOOD/	1630
33 BLOOD GROUP/	1596
34 COOMBS TEST/	1552
35 ((coomb$ or antiglobulin$) adj3 test$).tw.	1598
36 ((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	16636

37 transcutaneous$.tw.	6774
38 bilirubinomet$.tw.	109
39 icteromet$.tw.	11
40 (jaundice?met$ or jaundice met$).tw.	118
41 CARBON MONOXIDE/	12990
42 end tidal.tw.	5299
43 etco.tw.	52
44 NOMOGRAM/	1225
45 nomogram$.tw.	2280
46 (bilirubin$ adj3 percentile$).tw.	8
47 (hour$ adj3 bilirubin$).tw.	61
48 RISK ASSESSMENT/	163822
49 (risk$ adj3 (assess$ or index or model$)).tw.	35319
50 NEWBORN ASSESSMENT/	114
51 (total adj3 serum adj3 bilirubin$).tw.	1120
52 (serum adj3 bilirubin$ adj3 level$).tw.	1512
53 tsb.tw.	363
54 or/18-53	1010463
55 and/7,17,54	1537

CINAHL - Cumulative Index to Nursing & Allied Health Literature 1982 to April Week 3 2008

JAUN_recognise_predict_cinahl_230408

#	Searches	Results
1	INFANT, PREMATURE/	5759
2	preterm$.tw.	4893
3	INFANT, NEWBORN/	36675
4	(newborn$ or neonate$).tw.	9202
5	BLOOD GROUP INCOMPATIBILITY/	154
6	(glucose$ adj5 deficien$).tw.	73
7	or/1-6	41328
8	HYPERBILIRUBINEMIA/	200
9	hyperbilirubin?emia$.ti.	134
10	bilirubin?emia$.ti.	1
11	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	23
12	JAUNDICE/	192
13	jaundice$.ti.	279
14	KERNICTERUS/	92
15	kernicterus$.ti.	36
16	or/8-15	663
17	DIAGNOSIS/	1110
18	(prediction or predicting or recogniz$ or detection).ti.	9865
19	FAMILY HISTORY/	1191
20	history.ti.	5984
21	PHYSICAL EXAMINATION/	8809
22	((clinical$ or visual$ or physical$) adj3 examin$).tw.	7584

23	SKIN PIGMENTATION/	134
24	((skin or urine or stool$) adj3 colo?r$).tw.	187
25	((urine or stool$) adj3 examin$).tw.	118
26	BILIRUBIN/bl [Blood]	231
27	UMBILICAL CORD/	420
28	FETAL BLOOD/	749
29	BLOOD GROUPS/	164
30	COOMBS' TEST/	31
31	((coomb$ or antiglobulin$) adj3 test$).tw.	54
32	((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	692
33	transcutaneous$.tw.	867
34	bilirubinomet$.tw.	19
35	icteromet$.tw.	1
36	(jaundice?met$ or jaundice met$).tw.	14
37	CARBON MONOXIDE/	410
38	end tidal.tw.	350
39	etco.tw.	32
40	nomogram$.tw.	157
41	(bilirubin$ adj3 percentile$).tw.	1
42	(hour$ adj3 bilirubin$).tw.	8
43	RISK ASSESSMENT/	13435
44	(risk$ adj3 (assess$ or index or model$)).tw.	6295
45	NEONATAL ASSESSMENT/	875
46	(total adj3 serum adj3 bilirubin$).tw.	69

47 (serum adj3 bilirubin$ adj3 level$).tw.	61
48 tsb.tw.	30
49 or/17-48	53123
50 and/7,16,49	162

CINAHL EBSCO

JAUN_recognise_predict_cinahl_230408_6

Wednesday, May 06, 2009 9:25:37 AM

#	Query	Limiters/Expanders	Last Run Via	Results
S63	S5 and S17 and S62	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S62	S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34 or S35 or S36 or S37 or S38 or S39 or S40 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S53 or S54 or S55 or S56 or S57 or S58 or S59 or S60 or	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

	S61			
S61	TI tsb or AB tsb	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S60	TI serum N3 bilirubin* N3 level* or AB serum N3 bilirubin* N3 level*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S59	TI total N3 serum N3 bilirubin* or AB total N3 serum N3 bilirubin*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S58	MH NEONATAL ASSESSMENT	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S57	TI risk N3 model* or AB risk N3 model*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S56	TI risk N3 index* or AB risk N3 index*	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S55	TI risk N3 assessment* or AB risk N3 assessment*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S54	MH RISK ASSESSMENT	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S53	TI hour* N3 bilirubin* or AB hour* N3 bilirubin*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S52	TI bilirubin* N3 percentile* or AB bilirubin* N3 percentile*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S51	TI nomogram* or AB nomogram*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S50	TI etco or AB etco	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S49	TI end tidal or AB end tidal	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S48	MH CARBON MONOXIDE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S47	TI jaundice met* or AB jaundice met*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S46	TI icteromet* or AB icteromet*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S45	TI bilirubinomet* or AB bilirubinomet*	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S44	TI transcutaneous* or AB transcutaneous*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S43	TI (foetus N3 blood*) or AB (foetus N3 blood*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S42	TI (fetus N3 blood*) or AB (fetus N3 blood*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S41	TI (foetal N3 blood*) or AB (foetal N3 blood*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S40	TI (fetal N3 blood*) or AB (fetal N3 blood*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S39	TI (cord N3 blood*) or AB (cord N3 blood*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S38	TI (antiglobulin* N3 test*) or AB (antiglobulin* N3 test*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S37	TI (coomb* N3 test*) or AB (coomb* N3 test*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S36	MH COOMBS' TEST	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S35	MH BLOOD GROUPS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S34	MH FETAL BLOOD	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S33	MH UMBILICAL CORD	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S32	(MH "BILIRUBIN/BL")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S31	TI (examin* N3 stool*) or AB (examin* N3 stool*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S30	TI (examin* N3 urine) or AB (examin* N3 urine)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S29	TI (stool* N3 color*) or AB (stool* N3 colour*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S28	TI (urine N3 color*) or AB (urine N3 colour*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S27	TI (skin N3 color*) or AB (skin N3 colour*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S26	MH SKIN PIGMENTATION	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S25	TI (physical* N3 examin*) or AB (physical* N3 examin*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S24	TI (visual* N3 examin*) or AB (visual* N3 examin*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S23	TI (clinical* N3 examin*) or AB	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

	(clinical* N3 examin*)		Search Screen - Advanced Search Database - CINAHL with Full Text	
S22	MH PHYSICAL EXAMINATION	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S21	TI history	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S20	MH FAMILY HISTORY	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S19	TI (prediction or predicting or recogni* or detection)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S18	MH DIAGNOSIS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S17	S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S16	(TI "kernicterus*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S15	MH KERNICTERUS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S14	(TI jaundice*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S12	(AB "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S11	(TI "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S10	(AB "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S9	(TI "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S8	(TI "bilirubinaemia" OR "bilirubinemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S7	(TI "hyperbilirubinemia" or "hyperbilirubinaemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S6	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	

Ovid MEDLINE 1950 to June Week 4 2008

JAUN_recognise_predict_economic_medline_090708

#	Searches	Results
1	costs.tw.	75877
2	cost effective$.tw.	43549
3	economic.tw.	65215
4	or/1-3	160435
5	(metabolic adj cost).tw.	480
6	((energy or oxygen) adj cost).tw.	2016
7	4 not (5 or 6)	160205
8	INFANT, PREMATURE/	32498
9	preterm$.tw.	28724
10	INFANT, NEWBORN/	420292
11	(newborn$ or neonate$).tw.	137294
12	BLOOD GROUP INCOMPATIBILITY/	4831
13	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY/	3757

14 or/8-13	484157
15 HYPERBILIRUBINEMIA/	3398
16 HYPERBILIRUBINEMIA, NEONATAL/	157
17 hyperbilirubin?emia$.ti.	2174
18 bilirubin?emia$.ti.	148
19 ((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	282
20 exp JAUNDICE/	9967
21 jaundice$.ti.	9785
22 KERNICTERUS/	891
23 kernicterus$.ti.	361
24 or/15-23	20452
25 DIAGNOSIS/	15941
26 (prediction or predicting or recogniz$ or detection).ti.	183186
27 history.ti.	48172
28 PHYSICAL EXAMINATION/	23519
29 ((clinical$ or visual$ or physical$) adj3 examin$).tw.	74495
30 SKIN PIGMENTATION/	4079
31 ((skin or urine or stool$) adj3 colo?r$).tw.	2598
32 ((urine or stool$) adj3 examin$).tw.	3968
33 BILIRUBIN/bl [Blood]	11319
34 UMBILICAL CORD/	7264
35 FETAL BLOOD/	21153
36 BLOOD GROUP ANTIGENS/	14483
37 COOMBS' TEST/	3978

38	((coomb$ or antiglobulin$) adj3 test$).tw.	2486
39	((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	20418
40	transcutaneous$.tw.	8286
41	bilirubinomet$.tw.	144
42	icteromet$.tw.	29
43	(jaundice?met$ or jaundice met$).tw.	135
44	CARBON MONOXIDE/	12056
45	end tidal.tw.	5867
46	etco.tw.	144
47	NOMOGRAMS/	346
48	nomogram$.tw.	3080
49	(bilirubin$ adj3 percentile$).tw.	10
50	(hour$ adj3 bilirubin$).tw.	82
51	RISK ASSESSMENT/	93027
52	(risk$ adj3 (assess$ or index or model$)).tw.	38546
53	(total adj3 serum adj3 bilirubin$).tw.	1256
54	(serum adj3 bilirubin$ adj3 level$).tw.	1820
55	tsb.tw.	497
56	or/25-55	554568
57	and/14,24,56	1800
58	and/7,57	17
59	limit 58 to english language	15

EBM Reviews - Cochrane Central Register of Controlled Trials 2nd Quarter 2008

JAUN_recognise_predict_economic_cctr_090708

#	Searches	Results
1	costs.tw.	5343
2	cost effective$.tw.	4066
3	economic.tw.	2244
4	or/1-3	8799
5	(metabolic adj cost).tw.	38
6	((energy or oxygen) adj cost).tw.	178
7	4 not (5 or 6)	8789
8	INFANT, PREMATURE/	1688
9	preterm$.tw.	3060
10	INFANT, NEWBORN/	8341
11	(newborn$ or neonate$).tw.	4171
12	BLOOD GROUP INCOMPATIBILITY/	41
13	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY/	25
14	or/8-13	11364
15	HYPERBILIRUBINEMIA/	58
16	HYPERBILIRUBINEMIA, NEONATAL/	8
17	hyperbilirubin?emia$.ti.	147
18	bilirubin?emia$.ti.	4
19	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9

20 exp JAUNDICE/	247
21 jaundice$.ti.	192
22 KERNICTERUS/	2
23 kernicterus$.ti.	3
24 or/15-23	531
25 DIAGNOSIS/	26
26 (prediction or predicting or recogniz$ or detection).ti.	2797
27 history.ti.	718
28 PHYSICAL EXAMINATION/	487
29 ((clinical$ or visual$ or physical$) adj3 examin$).tw.	4818
30 SKIN PIGMENTATION/	107
31 ((skin or urine or stool$) adj3 colo?r$).tw.	136
32 ((urine or stool$) adj3 examin$).tw.	228
33 BILIRUBIN/bl [Blood]	478
34 UMBILICAL CORD/	112
35 FETAL BLOOD/	404
36 BLOOD GROUP ANTIGENS/	14
37 COOMBS' TEST/	17
38 ((coomb$ or antiglobulin$) adj3 test$).tw.	31
39 ((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	555
40 transcutaneous$.tw.	1266
41 bilirubinomet$.tw.	6
42 icteromet$.tw.	0
43 (jaundice?met$ or jaundice met$).tw.	19

44	CARBON MONOXIDE/	264
45	end tidal.tw.	1279
46	etco.tw.	34
47	NOMOGRAMS/	7
48	nomogram$.tw.	146
49	(bilirubin$ adj3 percentile$).tw.	0
50	(hour$ adj3 bilirubin$).tw.	24
51	RISK ASSESSMENT/	2861
52	(risk$ adj3 (assess$ or index or model$)).tw.	1568
53	(total adj3 serum adj3 bilirubin$).tw.	108
54	(serum adj3 bilirubin$ adj3 level$).tw.	179
55	tsb.tw.	24
56	or/25-55	17382
57	and/14,24,56	139
58	and/7,57	3

EBM Reviews - Health Technology Assessment 3rd Quarter 2008

JAUN_recognise_predict_economic_hta_090708

#	Searches	Results
1	costs.tw.	1155
2	cost effective$.tw.	915
3	economic.tw.	682

4	or/1-3	1657
5	(metabolic adj cost).tw.	0
6	((energy or oxygen) adj cost).tw.	0
7	4 not (5 or 6)	1657
8	INFANT, PREMATURE/	9
9	preterm$.tw.	22
10	INFANT, NEWBORN/	65
11	(newborn$ or neonate$).tw.	99
12	BLOOD GROUP INCOMPATIBILITY/	1
13	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY/	0
14	or/8-13	122
15	HYPERBILIRUBINEMIA/	4
16	HYPERBILIRUBINEMIA, NEONATAL/	1
17	hyperbilirubin?emia$.ti.	3
18	bilirubin?emia$.ti.	0
19	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	1
20	exp JAUNDICE/	1
21	jaundice$.ti.	3
22	KERNICTERUS/	1
23	kernicterus$.ti.	0
24	or/15-23	8
25	DIAGNOSIS/	4
26	(prediction or predicting or recogniz$ or detection).ti.	113
27	history.ti.	7

28	PHYSICAL EXAMINATION/	4
29	((clinical$ or visual$ or physical$) adj3 examin$).tw.	55
30	SKIN PIGMENTATION/	0
31	((skin or urine or stool$) adj3 colo?r$).tw.	1
32	((urine or stool$) adj3 examin$).tw.	0
33	BILIRUBIN/bl [Blood]	0
34	UMBILICAL CORD/	1
35	FETAL BLOOD/	11
36	BLOOD GROUP ANTIGENS/	0
37	COOMBS' TEST/	0
38	((coomb$ or antiglobulin$) adj3 test$).tw.	0
39	((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	15
40	transcutaneous$.tw.	13
41	bilirubinomet$.tw.	1
42	icteromet$.tw.	0
43	(jaundice?met$ or jaundice met$).tw.	0
44	CARBON MONOXIDE/	1
45	end tidal.tw.	0
46	etco.tw.	0
47	NOMOGRAMS/	0
48	nomogram$.tw.	0
49	(bilirubin$ adj3 percentile$).tw.	0
50	(hour$ adj3 bilirubin$).tw.	0
51	RISK ASSESSMENT/	34

52	(risk$ adj3 (assess$ or index or model$)).tw.	84
53	(total adj3 serum adj3 bilirubin$).tw.	0
54	(serum adj3 bilirubin$ adj3 level$).tw.	1
55	tsb.tw.	1
56	or/25-55	286
57	and/14,24,56	3
58	and/7,57	1

EBM Reviews - NHS Economic Evaluation Database 2nd Quarter 2008

JAUN_recognise_predict_economic_nhseed_090708

#	Searches	Results
1	costs.tw.	17123
2	cost effective$.tw.	8445
3	economic.tw.	23126
4	or/1-3	23406
5	(metabolic adj cost).tw.	0
6	((energy or oxygen) adj cost).tw.	0
7	4 not (5 or 6)	23406
8	INFANT, PREMATURE/	74
9	preterm$.tw.	78
10	INFANT, NEWBORN/	849
11	(newborn$ or neonate$).tw.	915

12	BLOOD GROUP INCOMPATIBILITY/	5
13	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY/	2
14	or/8-13	943
15	HYPERBILIRUBINEMIA/	2
16	HYPERBILIRUBINEMIA, NEONATAL/	1
17	hyperbilirubin?emia$.ti.	1
18	bilirubin?emia$.ti.	0
19	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	0
20	exp JAUNDICE/	5
21	jaundice$.ti.	8
22	KERNICTERUS/	1
23	kernicterus$.ti.	1
24	or/15-23	14
25	DIAGNOSIS/	10
26	(prediction or predicting or recogniz$ or detection).ti.	185
27	history.ti.	34
28	PHYSICAL EXAMINATION/	48
29	((clinical$ or visual$ or physical$) adj3 examin$).tw.	305
30	SKIN PIGMENTATION/	0
31	((skin or urine or stool$) adj3 colo?r$).tw.	4
32	((urine or stool$) adj3 examin$).tw.	12
33	BILIRUBIN/bl [Blood]	4
34	UMBILICAL CORD/	1
35	FETAL BLOOD/	9

36	BLOOD GROUP ANTIGENS/	0
37	COOMBS' TEST/	1
38	((coomb$ or antiglobulin$) adj3 test$).tw.	1
39	((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	14
40	transcutaneous$.tw.	20
41	bilirubinomet$.tw.	1
42	icteromet$.tw.	0
43	(jaundice?met$ or jaundice met$).tw.	0
44	CARBON MONOXIDE/	0
45	end tidal.tw.	6
46	etco.tw.	0
47	NOMOGRAMS/	0
48	nomogram$.tw.	6
49	(bilirubin$ adj3 percentile$).tw.	0
50	(hour$ adj3 bilirubin$).tw.	0
51	RISK ASSESSMENT/	481
52	(risk$ adj3 (assess$ or index or model$)).tw.	624
53	(total adj3 serum adj3 bilirubin$).tw.	5
54	(serum adj3 bilirubin$ adj3 level$).tw.	5
55	tsb.tw.	0
56	or/25-55	1192
57	and/14,24,56	3
58	and/7,57	3

EMBASE 1980 to 2008 Week 27

JAUN_recognise_predict_economic_embase_090708

#	Searches	Results
1	costs.tw.	62745
2	cost effective$.tw.	39866
3	economic.tw.	51827
4	or/1-3	130966
5	(metabolic adj cost).tw.	369
6	((energy or oxygen) adj cost).tw.	1661
7	4 not (5 or 6)	130794
8	PREMATURITY/	28363
9	preterm$.tw.	25709
10	NEWBORN/	175463
11	(newborn$ or neonate$).tw.	95167
12	exp BLOOD GROUP INCOMPATIBILITY/	2563
13	GLUCOSE 6 PHOSPHATE DEHYDROGENASE DEFICIENCY/	1496
14	or/8-13	237679
15	HYPERBILIRUBINEMIA/	5455
16	hyperbilirubin?emia$.ti.	1039
17	bilirubin?emia$.ti.	15
18	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	243
19	JAUNDICE/	9422

20 NEWBORN JAUNDICE/	1688
21 jaundice$.ti.	3593
22 KERNICTERUS/	692
23 kernicterus$.ti.	148
24 or/15-23	17469
25 DIAGNOSIS/	465076
26 (prediction or predicting or recogniz$ or detection).ti.	143262
27 HISTORY/	16293
28 FAMILY HISTORY/	25370
29 history.ti.	24359
30 PHYSICAL EXAMINATION/	58090
31 ((clinical$ or visual$ or physical$) adj3 examin$).tw.	61169
32 SKIN PIGMENTATION/	4549
33 ((skin or urine or stool$) adj3 colo?r$).tw.	2276
34 ((urine or stool$) adj3 examin$).tw.	2785
35 BLOOD LEVEL/	36799
36 BILIRUBIN BLOOD LEVEL/	6389
37 CORD SERUM/	237
38 UMBILICAL CORD BLOOD/	9570
39 FETUS BLOOD/	1638
40 BLOOD GROUP/	1604
41 COOMBS TEST/	1573
42 ((coomb$ or antiglobulin$) adj3 test$).tw.	1608
43 ((cord or fetal or foetal or fetus or foetus) adj3 blood$).tw.	16829

44	transcutaneous$.tw.	6839
45	bilirubinomet$.tw.	111
46	icteromet$.tw.	11
47	(jaundice?met$ or jaundice met$).tw.	120
48	CARBON MONOXIDE/	13178
49	end tidal.tw.	5354
50	etco.tw.	52
51	NOMOGRAM/	1273
52	nomogram$.tw.	2336
53	(bilirubin$ adj3 percentile$).tw.	9
54	(hour$ adj3 bilirubin$).tw.	63
55	RISK ASSESSMENT/	167602
56	(risk$ adj3 (assess$ or index or model$)).tw.	36102
57	NEWBORN ASSESSMENT/	130
58	(total adj3 serum adj3 bilirubin$).tw.	1145
59	(serum adj3 bilirubin$ adj3 level$).tw.	1544
60	tsb.tw.	372
61	or/25-60	1020724
62	and/14,24,61	1568
63	and/7,62	24

Question: Risk Factors

Ovid MEDLINE(R) 1950 to July Week 5 2008

JAUN_risk_factors_medline_070808

#	Searches	Results
1	INFANT, PREMATURE/	32701
2	preterm$.tw.	28961
3	INFANT, NEWBORN/	422670
4	(newborn$ or neonate$).tw.	137993
5	BLOOD GROUP INCOMPATIBILITY/	4845
6	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY/	3767
7	or/1-6	486794
8	HYPERBILIRUBINEMIA/	3407
9	HYPERBILIRUBINEMIA, NEONATAL/	163
10	hyperbilirubin?emia$.ti.	2187
11	bilirubin?emia$.ti.	149
12	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	283
13	exp JAUNDICE/	10019
14	jaundice$.ti.	9818
15	KERNICTERUS/	893
16	kernicterus$.ti.	363
17	or/8-16	20536
18	or/13-14	15665
19	or/8-10	4640
20	and/18-19	602
21	and/7,20	258
22	or/15-16	986

23	or/18-19	19703
24	or/12,22	1163
25	and/23-24	422
26	and/7,25	328
27	RISK FACTORS/	364028
28	risk factor$.ti.	44766
29	COMORBIDITY/	36477
30	"CONFOUNDING FACTORS (EPIDEMIOLOGY)"/	6456
31	or/27-30	402101
32	and/7,17,31	251
33	or/21,26,32	747
34	from 33 keep 1-10	10

EBM Reviews - Cochrane Central Register of Controlled Trials 3rd Quarter 2008

JAUN_risk_factors_cctr_070808

#	Searches	Results
1	INFANT, PREMATURE/	1709
2	preterm$.tw.	3074
3	INFANT, NEWBORN/	8435
4	(newborn$ or neonate$).tw.	4189
5	BLOOD GROUP INCOMPATIBILITY/	41
6	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY/	25
7	or/1-6	11437

8	HYPERBILIRUBINEMIA/	58
9	HYPERBILIRUBINEMIA, NEONATAL/	10
10	hyperbilirubin?emia$.ti.	148
11	bilirubin?emia$.ti.	4
12	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
13	exp JAUNDICE/	251
14	jaundice$.ti.	191
15	KERNICTERUS/	2
16	kernicterus$.ti.	3
17	or/8-16	536
18	or/13-14	383
19	or/8-10	191
20	and/18-19	48
21	and/7,20	48
22	or/15-16	5
23	or/18-19	526
24	or/12,22	14
25	and/23-24	5
26	and/7,25	5
27	RISK FACTORS/	10464
28	risk factor$.ti.	1717
29	COMORBIDITY/	1233
30	"CONFOUNDING FACTORS (EPIDEMIOLOGY)"/	224
31	or/27-30	12242
32	and/7,17,31	1
33	or/21,26,32	53

CDSR, DARE

JAUN_risk_factors_cdsrdare_070808

#	Searches	Results
1	INFANT, PREMATURE.kw.	194
2	preterm$.tw.	550
3	INFANT, NEWBORN.kw.	579
4	(newborn$ or neonate$).tw.	946
5	BLOOD GROUP INCOMPATIBILITY.kw.	1
6	GLUCOSEPHOSPHATE DEHYDROGENASE DEFICIENCY.kw.	0
7	or/1-6	1091
8	HYPERBILIRUBINEMIA.kw.	3
9	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
10	hyperbilirubin?emia$.ti.	2
11	bilirubin?emia$.ti.	0
12	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	5
13	JAUNDICE.kw.	13
14	jaundice$.ti.	10
15	KERNICTERUS.kw.	1
16	kernicterus$.ti.	0
17	or/8-16	18
18	or/13-14	15
19	or/8-10	4
20	and/18-19	3
21	and/7,20	3

22	or/15-16	1
23	or/18-19	16
24	or/12,22	6
25	and/23-24	4
26	and/7,25	4
27	RISK FACTORS.kw.	577
28	risk factor$.ti.	24
29	COMORBIDITY.kw.	39
30	"CONFOUNDING FACTORS (EPIDEMIOLOGY)".kw.	0
31	or/27-30	611
32	and/7,17,31	0
33	or/21,26,32	5

EMBASE 1980 to 2008 Week 31

JAUN_risk_factors_embase_070808

#	Searches	Results
1	PREMATURITY/	28534
2	preterm$.tw.	25873
3	NEWBORN/	175887
4	(newborn$ or neonate$).tw.	95506
5	exp BLOOD GROUP INCOMPATIBILITY/	2570
6	GLUCOSE 6 PHOSPHATE DEHYDROGENASE DEFICIENCY/	1508
7	or/1-6	238435
8	HYPERBILIRUBINEMIA/	5505

9	hyperbilirubin?emia$.ti.	1045
10	bilirubin?emia$.ti.	15
11	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	243
12	JAUNDICE/	9491
13	NEWBORN JAUNDICE/	1705
14	jaundice$.ti.	3602
15	KERNICTERUS/	699
16	kernicterus$.ti.	148
17	or/8-16	17595
18	or/13-14	4831
19	or/8-10	5731
20	and/18-19	775
21	and/7,20	571
22	or/15-16	702
23	or/18-19	9787
24	or/12,22	10101
25	and/23-24	2359
26	and/7,25	650
27	RISK FACTOR/	227978
28	risk factor$.ti.	37560
29	COMORBIDITY/	47834
30	confounding factor$.ti.	177
31	or/27-30	277617
32	and/7,17,31	290
33	or/21,26,32	1237

CINAHL - Cumulative Index to Nursing & Allied Health Literature 1982 to August Week 1 2008

JAUN_risk_factors_cinahl_070808

#	Searches	Results
1	INFANT, PREMATURE/	5661
2	preterm$.tw.	4757
3	INFANT, NEWBORN/	36594
4	(newborn$ or neonate$).tw.	9089
5	BLOOD GROUP INCOMPATIBILITY/	151
6	(glucose$ adj5 deficien$).tw.	71
7	or/1-6	**41326**
8	HYPERBILIRUBINEMIA/	201
9	hyperbilirubin?emia$.ti.	127
10	bilirubin?emia$.ti.	1
11	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	22
12	JAUNDICE/	205
13	jaundice$.ti.	282
14	KERNICTERUS/	86
15	kernicterus$.ti.	35
16	or/8-15	**667**
17	or/12-13	400
18	or/8-9	265
19	and/17-18	42

20	and/7,19	31
21	or/14-15	89
22	or/17-18	623
23	or/11,21	101
24	and/22-23	58
25	and/7,24	57
26	RISK FACTORS/	30074
27	risk factor$.ti.	6903
28	COMORBIDITY/	9000
29	confounding factor$.ti.	27
30	or/26-29	42220
31	and/7,16,30	25
32	or/20,25,31	98

CINAHL EBSCO

JAUN_risk_factors_cinahl_ebsco_070808

Friday, May 15, 2009 4:01:43 AM

#	Query	Limiters/Expanders	Last Run Via	Results
S33	S21 or S25 or S32	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	113
S32	S7 and S17 and S31	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	32
S31	S27 or S28 or S29 or S30	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	51515
S30	TI confounding factor*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	30
S29	MH COMORBIDITY	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen	11607

			- Advanced Search Database - CINAHL with Full Text	
S28	TI risk factor*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	8349
S27	MH RISK FACTORS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	36180
S26	S7 AND S25	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	71
S25	S18 AND S24	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	84
S24	S23 or S22	Search modes - Boolean/Phrase	Interface - EBSCOhost	416

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S23	S8 or S9 or S10 or S11 or S12	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	343
S22	S15 or S16	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	119
S21	S7 and S20	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	43
S20	S18 and S19	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	56
S19	S8 or S9	Search modes -	Interface -	328

		Boolean/Phrase	EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	
S18	S13 or S14	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	476
S17	S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	808
S16	TI kernicterus	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	49
S15	MH KERNICTERUS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	116

S14	TI jaundice*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	329
S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	255
S12	TI (hyperbilirubin* N3 encephalopath*) or AB (hyperbilirubin* N3 encephalopath*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	3
S11	TI (bilirubin* N3 encephalopath*) or AB (bilirubin* N3 encephalopath*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	33
S10	TI (bilirubinemi*) or TI (bilirubinaemi*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1

S9	TI (hyperbilirubinemi*) or TI (hyperbilirubinaemi*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	163
S8	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	246
S7	S1 or S2 or S3 or S4 or S5 or S6	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	48069
S6	TI (glucose N5 deficien*) or AB (glucose N5 deficien*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	95
S5	MH BLOOD GROUP INCOMPATIBILITY+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	640

S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	10924
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	41919
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	5983
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	6767

Question: What should be included in a formal assessment of a baby with neonatal hyperbilirubinaemia?

Ovid MEDLINE(R) 1950 to August Week 4 2008

JAUN_assess_tests_hyperbil_medline_050908

#	Searches	Results
1	INFANT, PREMATURE/	32828
2	preterm$.tw.	29140
3	INFANT, NEWBORN/	424141
4	(newborn$ or neonate$).tw.	138590
5	or/1-4	481742
6	HYPERBILIRUBINEMIA/	3415
7	HYPERBILIRUBINEMIA, NEONATAL/	167
8	hyperbilirubin?emia$.ti.	2193
9	bilirubin?emia$.ti.	149
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	285
11	exp JAUNDICE/	10042
12	jaundice$.ti.	9833
13	or/6-12	20019
14	THYROID FUNCTION TESTS/	11340
15	TSH.tw.	20277
16	(thyroid adj3 stimulating adj3 hormone$).tw.	6085
17	(thyroidstimulating adj3 hormone$).tw.	11
18	thyrotropin.ti.	7579
19	(urine adj3 reducing adj3 substance$).tw.	8

20 ASPARTATE AMINOTRANSFERASES/bl	14602
21 AST.ti.	206
22 ALANINE TRANSAMINASE/bl	15564
23 ALT.ti.	344
24 ALAKALINE PHOSPHATASE/bl	0
25 ALP.ti.	133
26 GAMMA-GLUTAMYLTRANSFERASE/bl	3768
27 GGT.ti.	126
28 HEMOGLOBINS/	51157
29 h?emoglobin$.ti.	30783
30 HEMATOCRIT/	29026
31 h?ematocrit$.ti.	2251
32 (peripheral adj3 blood adj3 smear$).tw.	1229
33 RETICULOCYTE COUNT/	704
34 (reticulocyte$ adj3 (count$ or number$)).tw.	2173
35 BLOOD GAS ANALYSIS/	17340
36 (blood adj3 gas$).ti.	5204
37 (ABG and arterial).tw.	243
38 SERUM ALBUMIN/	35634
39 ((serum or plasma) adj3 albumin).tw.	42168
40 (total adj3 serum adj3 bilirubin$).tw.	1268
41 (serum adj3 bilirubin$ adj3 level$).tw.	1838
42 tsb.tw.	510
43 BILIRUBIN/bl [Blood]	11384

44	(unconjugated adj3 bilirubin).tw.	855
45	(split adj3 bilirubin).tw.	3
46	URINALYSIS/	2820
47	(urine adj3 (test$ or check$ or analys?s or level$)).tw.	12349
48	or/14-47	252812
49	and/5,13,48	1573
50	limit 49 to humans	1490
51	limit 50 to english language	1171

EBM Reviews - Cochrane Central Register of Controlled Trials 3rd Quarter 2008

JAUN_assess_tests_hyperbil_cctr_050908

#	Searches	Results
1	INFANT, PREMATURE/	1709
2	preterm$.tw.	3074
3	INFANT, NEWBORN/	8435
4	(newborn$ or neonate$).tw.	4189
5	or/1-4	11391

6	HYPERBILIRUBINEMIA/	58
7	HYPERBILIRUBINEMIA, NEONATAL/	10
8	hyperbilirubin?emia$.ti.	148
9	bilirubin?emia$.ti.	4
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
11	exp JAUNDICE/	251
12	jaundice$.ti.	191
13	or/6-12	533
14	THYROID FUNCTION TESTS/	168
15	TSH.tw.	875
16	(thyroid adj3 stimulating adj3 hormone$).tw.	294
17	(thyroidstimulating adj3 hormone$).tw.	1
18	thyrotropin.ti.	231
19	(urine adj3 reducing adj3 substance$).tw.	0
20	ASPARTATE AMINOTRANSFERASES/bl	584
21	AST.ti.	18
22	ALANINE TRANSAMINASE/bl	876
23	ALT.ti.	56
24	ALKALINE PHOSPHATASE/bl	763
25	ALP.ti.	2
26	GAMMA-GLUTAMYLTRANSFERASE/bl	169
27	GGT.ti.	2
28	HEMOGLOBINS/	1869
29	h?emoglobin$.ti.	502

30 HEMATOCRIT/	1204
31 h?ematocrit$.ti.	88
32 (peripheral adj3 blood adj3 smear$).tw.	13
33 RETICULOCYTE COUNT/	94
34 (reticulocyte$ adj3 (count$ or number$)).tw.	227
35 Blood GAS ANALYSIS/	831
36 (blood adj3 gas$).ti.	357
37 (ABG and arterial).tw.	27
38 SERUM ALBUMIN/	742
39 ((serum or plasma) adj3 albumin).tw.	1295
40 (total adj3 serum adj3 bilirubin$).tw.	110
41 (serum adj3 bilirubin$ adj3 level$).tw.	183
42 tsb.tw.	24
43 BILIRUBIN/bl [Blood]	483
44 (unconjugated adj3 bilirubin).tw.	19
45 (split adj3 bilirubin).tw.	0
46 URINALYSIS/	102
47 (urine adj3 (test$ or check$ or analys?s or level$)).tw.	1091
48 or/14-47	10361
49 and/5,13,48	129

DARE, CDSR

JAUN_assess_tests_hyperbil_cdsrdare_050908

#	Searches	Results
1	INFANT, PREMATURE.kw.	207
2	preterm$.tw.	560
3	INFANT, NEWBORN.kw.	595
4	(newborn$ or neonate$).tw.	954
5	or/1-4	1104
6	HYPERBILIRUBINEMIA.kw.	3
7	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
8	hyperbilirubin?emia$.ti.	2
9	bilirubin?emia$.ti.	0
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	5
11	JAUNDICE.kw.	13
12	jaundice$.ti.	10
13	or/6-12	18
14	THYROID FUNCTION TESTS.kw.	1
15	TSH.tw.	27
16	(thyroid adj3 stimulating adj3 hormone$).tw.	24
17	(thyroidstimulating adj3 hormone$).tw.	0
18	thyrotropin.ti.	2
19	(urine adj3 reducing adj3 substance$).tw.	0
20	ASPARTATE AMINOTRANSFERASES.kw.	2
21	AST.ti.	0
22	ALANINE TRANSAMINASE.kw.	8

23 ALT.ti.	0
24 ALKALINE PHOSPHATASE.kw.	0
25 ALP.ti.	0
26 GAMMA-GLUTAMYLTRANSFERASE.kw.	2
27 GGT.ti.	0
28 HEMOGLOBINS.kw.	14
29 h?emoglobin$.ti.	6
30 HEMATOCRIT.kw.	7
31 h?ematocrit$.ti.	1
32 (peripheral adj3 blood adj3 smear$).tw.	3
33 RETICULOCYTE COUNT.kw.	0
34 (reticulocyte$ adj3 (count$ or number$)).tw.	8
35 BLOOD GAS ANALYSIS.kw.	3
36 (blood adj3 gas$).ti.	0
37 (ABG and arterial).tw.	6
38 SERUM ALBUMIN.kw.	9
39 ((serum or plasma) adj3 albumin).tw.	97
40 (total adj3 serum adj3 bilirubin$).tw.	15
41 (serum adj3 bilirubin$ adj3 level$).tw.	23
42 tsb.tw.	1
43 BILIRUBIN.kw.	4
44 (unconjugated adj3 bilirubin).tw.	5
45 (split adj3 bilirubin).tw.	0
46 URINALYSIS.kw.	10

47	(urine adj3 (test$ or check$ or analys?s or level$)).tw.	143
48	or/14-47	352
49	and/5,13,48	7

CINAHL - Cumulative Index to Nursing & Allied Health Literature 1982 to September Week 1 2008

JAUN_assess_tests_hyperbil_cinahl_050908

#	Searches	Results
1	INFANT, PREMATURE/	6174
2	preterm$.tw.	5276
3	INFANT, NEWBORN/	38718
4	(newborn$ or neonate$).tw.	9765
5	or/1-4	43532
6	HYPERBILIRUBINEMIA/	212
7	hyperbilirubin?emia$.ti.	142
8	bilirubin?emia$.ti.	1
9	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	26
10	JAUNDICE/	215
11	jaundice$.ti.	301
12	or/6-11	678
13	THYROID FUNCTION TESTS/	387
14	TSH.tw.	195

15	(thyroid adj3 stimulating adj3 hormone$).tw.	226
16	(thyroidstimulating adj3 hormone$).tw.	2
17	thyrotropin.ti.	30
18	(urine adj3 reducing adj3 substance$).tw.	0
19	ASPARATE AMINOTRANSFERASE/	0
20	AST.ti.	99
21	ALANINE AMINOTRANSFERASE/	381
22	ALT.ti.	26
23	ALKALINE PHOSPHATASE/	386
24	ALP.ti.	5
25	GAMMA-GLUTAMYLTRANSFERASE/	105
26	GGT.ti.	8
27	HEMOGLOBINS/ or HEMOGLOBIN A, GLYCOSYLATED/	4835
28	h?emoglobin$.ti.	660
29	Hematocrit/	910
30	h?ematocrit$.ti.	110
31	(peripheral adj3 blood adj3 smear$).tw.	49
32	RETICULOCYTE COUNT/	36
33	(reticulocyte$ adj3 (count$ or number$)).tw.	88
34	BLOOD GAS ANALYSIS/	1598
35	(blood adj3 gas$).ti.	380
36	(ABG and arterial).tw.	64
37	SERUM ALBUMIN/	808
38	((serum or plasma) adj3 albumin).tw.	835

39	(total adj3 serum adj3 bilirubin$).tw.	76
40	(serum adj3 bilirubin$ adj3 level$).tw.	70
41	tsb.tw.	34
42	BILIRUBIN/bl [Blood]	259
43	(unconjugated adj3 bilirubin).tw.	22
44	(split adj3 bilirubin).tw.	1
45	URINALYSIS/	2158
46	(urine adj3 (test$ or check$ or analys?s or level$)).tw.	700
47	or/13-46	12776
48	and/5,12,47	128

CINAHL EBSCO

JAUN_assess_tests_hyperbil_cinahl_050908_4

#	Query	Limiters/Expanders	Last Run Via	Results
S55	S5 and S15 and S54	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S54	S16 or S17 or S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen -	Display

	or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34 or S35 or S36 or S37 or S38 or S39 or S40 or S41 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S53		Advanced Search Database - CINAHL with Full Text	
S53	AB (urine N3 test*) or AB (urine N3 check*) or AB (urine N3 analysis) or AB (urine N3 analyses) or AB (urine N3 level*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S52	TI (urine N3 test*) or TI (urine N3 check*) or TI (urine N3 analysis) or TI (urine N3 analyses) or TI (urine N3 level*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S51	MH URINALYSIS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S50	TI (split bilirubin) or AB (split bilirubin)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S49	TI (unconjugated N3 bilirubin) or AB (unconjugated N3	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen -	Display

	bilirubin)		Advanced Search Database - CINAHL with Full Text	
S48	MH BILIRUBIN/BL	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S47	TI (tsb) or AB (tsb)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S46	TI (serum albumin level*) or AB (total serum level*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S45	TI (total serum albumin) or AB (total serum albumin)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S44	TI (plasma N3 albumin) or AB (plasma N3 albumin)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S43	TI (serum N3 albumin) or AB (serum N3 albumin)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S42	MH SERUM ALBUMIN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S41	AB (ABG) and AB (arterial)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S40	TI (ABG) and TI (arterial)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S39	TI (blood gas*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S38	MH BLOOD GAS ANALYSIS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S37	TI (reticulocyte* N3 number*) or AB (reticulocyte* N3 number*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S36	TI (reticulocyte* N3 count*) or AB (reticulocyte* N3 count*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S35	MH RETICULOCYTE COUNT	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S34	TI (peripheral blood smear*) or AB (peripheral blood smear*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S33	MH HEMATOCRIT	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S32	TI (haemoglobin* or hemoglobin*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S31	MH HEMOGLOBIN A, GLYCOSYLATED	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S30	MH HEMOGLOBINS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S29	TI (GGT)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S28	MH GAMMA-GLUTAMYLTRANSFERASE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S27	TI (ALP)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S26	MH ALKALINE PHOSPHATASE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S25	TI (ALT)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S24	MH ALANINE AMINOTRANSFERASE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S23	TI (AST)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S22	MH ASPARTATE AMINOTRANSFERASE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S21	TI (urine reducing substance*) or AB ((urine reducing substance*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S20	TI (thyrotropin) or AB ((thyrotropin)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S19	TI (thyroidstimulating N3 hormone*) or AB (thyroidstimulating N3 hormone*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S18	TI (thyroid stimulating hormone*) or AB (thyroid stimulating hormone*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S17	TI (tsb) or AB (tsb)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S16	MH THYROID FUNCTION TESTS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S15	S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S14	(TI jaundice*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S12	(AB "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S11	(TI "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S10	(AB "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S9	(TI "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S8	(TI "bilirubinaemia" OR "bilirubinemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S7	(TI "hyperbilirubinemia" or "hyperbilirubinaemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S6	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

Question: What should be included in a formal assessment of a baby with neonatal hyperbilirubinaemia? Search 2. GDG requested a search on three additional tests G6PD, Coomb's and complete blood count.

Ovid MEDLINE(R) 1950 to October Week 1 2008

JAUN_assess_tests_hyperbil_SEARCH2_medline_091008

#	Searches	Results
1	INFANT, PREMATURE/	33074
2	preterm$.tw.	29486
3	INFANT, NEWBORN/	426267
4	(newborn$ or neonate$).tw.	139364
5	or/1-4	484217
6	HYPERBILIRUBINEMIA/	3433
7	HYPERBILIRUBINEMIA, NEONATAL/	176
8	hyperbilirubin?emia$.ti.	2206
9	bilirubin?emia$.ti.	149
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	286
11	exp JAUNDICE/	10081
12	jaundice$.ti.	9855
13	KERNICTERUS/	896
14	kernicterus$.ti.	363
15	or/6-14	20648
16	Glucosephosphate Dehydrogenase Deficiency/	3783
17	Coombs' Test/	4021
18	BLOOD GROUP INCOMPATIBILITY/	4890

19	G6PD.tw.	2704
20	BLOOD CELL COUNT/	17683
21	complete blood count$.tw.	1926
22	or/16-21	33131
23	and/5,15,22	476
24	limit 23 to (english language and humans)	314

EBM Reviews - Cochrane Central Register of Controlled Trials 3rd Quarter 2008

JAUN_assess_tests_hyperbil_SEARCH2_cctr_091008

#	Searches	Results
1	INFANT, PREMATURE/	1709
2	preterm$.tw.	3074
3	INFANT, NEWBORN/	8435
4	(newborn$ or neonate$).tw.	4189
5	or/1-4	11391
6	HYPERBILIRUBINEMIA/	58
7	HYPERBILIRUBINEMIA, NEONATAL/	10
8	hyperbilirubin?emia$.ti.	148
9	bilirubin?emia$.ti.	4
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
11	exp JAUNDICE/	251

12	jaundice$.ti.	191
13	KERNICTERUS/	2
14	kernicterus$.ti.	3
15	or/6-14	536
16	Glucosephosphate Dehydrogenase Deficiency/	25
17	Coombs' Test/	18
18	BLOOD GROUP INCOMPATIBILITY/	41
19	G6PD.tw.	26
20	BLOOD CELL COUNT/	542
21	complete blood count$.tw.	157
22	or/16-21	785
23	and/5,15,22	19

DARE, CDSR

JAUN_assess_tests_hyperbil_SEARCH2_cdsrdare_091008

#	Searches	Results
1	INFANT, PREMATURE.kw.	207
2	preterm$.tw,tx.	560
3	INFANT, NEWBORN.kw.	595
4	(newborn$ or neonate$).tw,tx.	954
5	or/1-4	1104
6	HYPERBILIRUBINEMIA.kw.	3

7	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
8	hyperbilirubin?emia$.ti.	2
9	bilirubin?emia$.ti.	0
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw,tx.	5
11	JAUNDICE.kw.	13
12	jaundice$.ti.	10
13	KERNICTERUS.kw.	1
14	kernicterus$.ti.	0
15	or/6-14	18
16	Glucosephosphate Dehydrogenase Deficiency.kw.	0
17	Coombs' Test.kw.	0
18	BLOOD GROUP INCOMPATIBILITY.kw.	1
19	G6PD.tw,tx.	6
20	BLOOD CELL COUNT.kw.	4
21	complete blood count$.tw,tx.	14
22	or/16-21	23
23	and/5,15,22	2

EMBASE 1980 to 2008 Week 40

JAUN_assess_tests_hyperbil_SEARCH2_embase_091008

#	Searches	Results
1	PREMATURITY/	28910

2	preterm$.tw.	26207
3	NEWBORN/	177050
4	(newborn$ or neonate$).tw.	96324
5	or/1-4	237012
6	HYPERBILIRUBINEMIA/	5618
7	hyperbilirubin?emia$.ti.	1053
8	bilirubin?emia$.ti.	15
9	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	244
10	JAUNDICE/	9651
11	NEWBORN JAUNDICE/	1719
12	jaundice$.ti.	3621
13	KERNICTERUS/	704
14	kernicterus$.ti.	149
15	or/6-14	17878
16	GLUCOSE 6 PHOSPHATE DEHYDROGENASE DEFICIENCY/	1527
17	G6PD.tw.	2020
18	COOMBS TEST/	1620
19	exp BLOOD CELL COUNT/	64937
20	complete blood count$.tw.	1670
21	exp BLOOD GROUP INCOMPATIBILITY/	2599
22	or/16-21	72155
23	and/5,15,22	381

CINAHL - Cumulative Index to Nursing & Allied Health

Literature 1982 to October Week 1 2008

JAUN_assess_tests_hyperbil_SEARCH2_cinahl_091008

#	Searches	Results
1	INFANT, PREMATURE/	6268
2	preterm$.tw.	5352
3	INFANT, NEWBORN/	39143
4	(newborn$ or neonate$).tw.	9892
5	or/1-4	44044
6	HYPERBILIRUBINEMIA/	215
7	hyperbilirubin?emia$.ti.	143
8	bilirubin?emia$.ti.	1
9	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	27
10	JAUNDICE/	221
11	jaundice$.ti.	301
12	Kernicterus/	101
13	kernicterus$.ti.	40
14	or/6-13	727
15	G6PD.tw.	45
16	Glucose-6-phosphate dehydrogenase.tw.	88
17	Coombs' Test/	34
18	exp Blood Group Incompatibility/	580
19	Blood Cell Count/	569

20 complete blood count$.tw.	187
21 or/15-20	1395
22 and/5,14,21	126

CINAHL EBSCO

JAUN_assess_tests_hyperbil_search2_cinahl_091008_2

#	Query	Limiters/Expanders	Last Run Via	Results
S25	S5 and S17 and S24	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S24	S18 or S19 or S20 or S21 or S22 or S23	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S23	TI (complete blood count*) or AB (complete blood count*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S22	MH BLOOD CELL COUNT	Search modes -	Interface - EBSCOhost	Display

		Boolean/Phrase	Search Screen - Advanced Search Database - CINAHL with Full Text	
S21	MH BLOOD GROUP INCOMPATIBILITY+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S20	MH COOMBS' TEST	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S19	TI (glucose 6 phosphate dehydrogenase) or AB (glucose 6 phosphate dehydrogenase)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S18	TI (G6PD) or AB (G6PD)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S17	S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S16	(TI "kernicterus*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S15	MH KERNICTERUS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S14	(TI jaundice*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S12	(AB "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S11	(TI "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S10	(AB "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S9	(TI "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S8	(TI "bilirubinaemia" OR "bilirubinemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S7	(TI "hyperbilirubinemia" or "hyperbilirubinaemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S6	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

Question: What should be included in a formal assessment of a baby with neonatal hyperbilirubinaemia? Economic Evaluation

Ovid MEDLINE(R) 1950 to September Week 3 2008

JAUN_assess_tests_hyperbil_economic_medline_240908

#	Searches	Results
1	costs.tw.	77470
2	cost effective$.tw.	44545
3	economic.tw.	66685
4	or/1-3	163873
5	(metabolic adj cost).tw.	486
6	((energy or oxygen) adj cost).tw.	2052
7	4 not (5 or 6)	163640
8	INFANT, PREMATURE/	32893
9	preterm$.tw.	29239
10	INFANT, NEWBORN/	424897
11	(newborn$ or neonate$).tw.	138853
12	or/8-11	482616
13	HYPERBILIRUBINEMIA/	3420
14	HYPERBILIRUBINEMIA, NEONATAL/	173
15	hyperbilirubin?emia$.ti.	2198
16	bilirubin?emia$.ti.	149

17 ((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	286
18 exp JAUNDICE/	10062
19 jaundice$.ti.	9844
20 or/13-19	20052
21 THYROID FUNCTION TESTS/	11346
22 TSH.tw.	20306
23 (thyroid adj3 stimulating adj3 hormone$).tw.	6104
24 (thyroidstimulating adj3 hormone$).tw.	11
25 thyrotropin.ti.	7581
26 (urine adj3 reducing adj3 substance$).tw.	8
27 ASPARTATE AMINOTRANSFERASES/bl	14626
28 AST.ti.	206
29 ALANINE TRANSAMINASE/bl	15609
30 ALT.ti.	344
31 ALAKALINE PHOSPHATASE/bl	0
32 ALP.ti.	133
33 GAMMA-GLUTAMYLTRANSFERASE/bl	3777
34 GGT.ti.	126
35 HEMOGLOBINS/	51235
36 h?emoglobin$.ti.	30815
37 HEMATOCRIT/	29045
38 h?ematocrit$.ti.	2251
39 (peripheral adj3 blood adj3 smear$).tw.	1233
40 RETICULOCYTE COUNT/	705

41	(reticulocyte$ adj3 (count$ or number$)).tw.	2177
42	BLOOD GAS ANALYSIS/	17355
43	(blood adj3 gas$).ti.	5207
44	(ABG and arterial).tw.	244
45	SERUM ALBUMIN/	35685
46	((serum or plasma) adj3 albumin).tw.	42274
47	(total adj3 serum adj3 bilirubin$).tw.	1281
48	(serum adj3 bilirubin$ adj3 level$).tw.	1850
49	tsb.tw.	512
50	BILIRUBIN/bl [Blood]	11401
51	(unconjugated adj3 bilirubin).tw.	859
52	(split adj3 bilirubin).tw.	3
53	URINALYSIS/	2841
54	(urine adj3 (test$ or check$ or analys?s or level$)).tw.	12386
55	or/21-54	253225
56	and/12,20,55	1576
57	limit 56 to humans	1493
58	limit 57 to english language	1173
59	and/7,12,20,58	14

EBM Reviews - Cochrane Central Register of Controlled Trials 3rd Quarter 2008

JAUN_assess_tests_hyperbil_economic_cctr_240908

#	Searches	Results
1	costs.tw.	5410
2	cost effective$.tw.	4135
3	economic.tw.	2275
4	or/1-3	8908
5	(metabolic adj cost).tw.	38
6	((energy or oxygen) adj cost).tw.	178
7	4 not (5 or 6)	8898
8	INFANT, PREMATURE/	1709
9	preterm$.tw.	3074
10	INFANT, NEWBORN/	8435
11	(newborn$ or neonate$).tw.	4189
12	or/8-11	11391
13	HYPERBILIRUBINEMIA/	58
14	HYPERBILIRUBINEMIA, NEONATAL/	10
15	hyperbilirubin?emia$.ti.	148
16	bilirubin?emia$.ti.	4
17	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
18	exp JAUNDICE/	251
19	jaundice$.ti.	191
20	or/13-19	533
21	THYROID FUNCTION TESTS/	168
22	TSH.tw.	875
23	(thyroid adj3 stimulating adj3 hormone$).tw.	294

24	(thyroidstimulating adj3 hormone$).tw.	1
25	thyrotropin.ti.	231
26	(urine adj3 reducing adj3 substance$).tw.	0
27	ASPARTATE AMINOTRANSFERASES/bl	584
28	AST.ti.	18
29	ALANINE TRANSAMINASE/bl	876
30	ALT.ti.	56
31	ALKALINE PHOSPHATASE/bl	763
32	ALP.ti.	2
33	GAMMA-GLUTAMYLTRANSFERASE/bl	169
34	GGT.ti.	2
35	HEMOGLOBINS/	1869
36	h?emoglobin$.ti.	502
37	HEMATOCRIT/	1204
38	h?ematocrit$.ti.	88
39	(peripheral adj3 blood adj3 smear$).tw.	13
40	RETICULOCYTE COUNT/	94
41	(reticulocyte$ adj3 (count$ or number$)).tw.	227
42	Blood GAS ANALYSIS/	831
43	(blood adj3 gas$).ti.	357
44	(ABG and arterial).tw.	27
45	SERUM ALBUMIN/	742
46	((serum or plasma) adj3 albumin).tw.	1295
47	(total adj3 serum adj3 bilirubin$).tw.	110

48	(serum adj3 bilirubin$ adj3 level$).tw.	183
49	tsb.tw.	24
50	BILIRUBIN/bl [Blood]	483
51	(unconjugated adj3 bilirubin).tw.	19
52	(split adj3 bilirubin).tw.	0
53	URINALYSIS/	102
54	(urine adj3 (test$ or check$ or analys?s or level$)).tw.	1091
55	or/21-54	10361
56	and/7,12,20,55	3

EBM Reviews - Health Technology Assessment 3rd Quarter 2008

JAUN_assess_tests_hyperbil_economic_hta_240908

#	Searches	Results
1	costs.tw.	1155
2	cost effective$.tw.	915
3	economic.tw.	682
4	or/1-3	1657
5	(metabolic adj cost).tw.	0
6	((energy or oxygen) adj cost).tw.	0
7	4 not (5 or 6)	1657
8	INFANT, PREMATURE/	9
9	preterm$.tw.	22

10	INFANT, NEWBORN/	65
11	(newborn$ or neonate$).tw.	99
12	or/8-11	121
13	HYPERBILIRUBINEMIA/	4
14	HYPERBILIRUBINEMIA, NEONATAL/	1
15	hyperbilirubin?emia$.ti.	3
16	bilirubin?emia$.ti.	0
17	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	1
18	exp JAUNDICE/	1
19	jaundice$.ti.	3
20	or/13-19	8
21	THYROID FUNCTION TESTS/	3
22	TSH.tw.	1
23	(thyroid adj3 stimulating adj3 hormone$).tw.	2
24	(thyroidstimulating adj3 hormone$).tw.	0
25	thyrotropin.ti.	0
26	(urine adj3 reducing adj3 substance$).tw.	0
27	ASPARTATE AMINOTRANSFERASES/bl	0
28	AST.ti.	0
29	ALANINE TRANSAMINASE/bl	0
30	ALT.ti.	0
31	ALAKALINE PHOSPHATASE/bl	0
32	ALP.ti.	0
33	GAMMA-GLUTAMYLTRANSFERASE/bl	0

34 GGT.ti.	0
35 HEMOGLOBINS/	2
36 h?emoglobin$.ti.	9
37 HEMATOCRIT/	1
38 h?ematocrit$.ti.	0
39 (peripheral adj3 blood adj3 smear$).tw.	0
40 RETICULOCYTE COUNT/	0
41 (reticulocyte$ adj3 (count$ or number$)).tw.	0
42 BLOOD GAS ANALYSIS/	3
43 (blood adj3 gas$).ti.	2
44 (ABG and arterial).tw.	0
45 SERUM ALBUMIN/	5
46 ((serum or plasma) adj3 albumin).tw.	7
47 (total adj3 serum adj3 bilirubin$).tw.	0
48 (serum adj3 bilirubin$ adj3 level$).tw.	1
49 tsb.tw.	1
50 BILIRUBIN/bl [Blood]	0
51 (unconjugated adj3 bilirubin).tw.	0
52 (split adj3 bilirubin).tw.	0
53 URINALYSIS/	5
54 (urine adj3 (test$ or check$ or analys?s or level$)).tw.	7
55 or/21-54	38
56 and/7,12,20,55	1

EBM Reviews - NHS Economic Evaluation Database 3rd Quarter 2008

JAUN_assess_tests_hyperbil_economic_nhseed_240908

#	Searches	Results
1	costs.tw.	17348
2	cost effective$.tw.	8488
3	economic.tw.	23373
4	or/1-3	23646
5	(metabolic adj cost).tw.	0
6	((energy or oxygen) adj cost).tw.	0
7	4 not (5 or 6)	23646
8	INFANT, PREMATURE/	77
9	preterm$.tw.	79
10	INFANT, NEWBORN/	861
11	(newborn$ or neonate$).tw.	925
12	or/8-11	948
13	HYPERBILIRUBINEMIA/	2
14	HYPERBILIRUBINEMIA, NEONATAL/	1
15	hyperbilirubin?emia$.ti.	1
16	bilirubin?emia$.ti.	0
17	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	0
18	exp JAUNDICE/	5
19	jaundice$.ti.	8

20	or/13-19	14
21	THYROID FUNCTION TESTS/	1
22	TSH.tw.	8
23	(thyroid adj3 stimulating adj3 hormone$).tw.	12
24	(thyroidstimulating adj3 hormone$).tw.	0
25	thyrotropin.ti.	2
26	(urine adj3 reducing adj3 substance$).tw.	0
27	ASPARTATE AMINOTRANSFERASES/bl	1
28	AST.ti.	0
29	ALANINE TRANSAMINASE/bl	10
30	ALT.ti.	0
31	ALAKALINE PHOSPHATASE/bl	0
32	ALP.ti.	0
33	GAMMA-GLUTAMYLTRANSFERASE/bl	0
34	GGT.ti.	0
35	HEMOGLOBINS/	34
36	h?emoglobin$.ti.	14
37	HEMATOCRIT/	17
38	h?ematocrit$.ti.	1
39	(peripheral adj3 blood adj3 smear$).tw.	0
40	RETICULOCYTE COUNT/	3
41	(reticulocyte$ adj3 (count$ or number$)).tw.	7
42	BLOOD GAS ANALYSIS/	9
43	(blood adj3 gas$).ti.	3

44	(ABG and arterial).tw.	3
45	SERUM ALBUMIN/	13
46	((serum or plasma) adj3 albumin).tw.	29
47	(total adj3 serum adj3 bilirubin$).tw.	5
48	(serum adj3 bilirubin$ adj3 level$).tw.	5
49	tsb.tw.	0
50	BILIRUBIN/bl [Blood]	4
51	(unconjugated adj3 bilirubin).tw.	0
52	(split adj3 bilirubin).tw.	0
53	URINALYSIS/	24
54	(urine adj3 (test$ or check$ or analys?s or level$)).tw.	50
55	or/21-54	209
56	and/7,12,20,55	3

EBM Reviews - NHS Economic Evaluation Database 3rd Quarter 2008

JAUN_assess_tests_hyperbil_economic_nhseed_240908

#	Searches	Results
1	costs.tw.	17348
2	cost effective$.tw.	8488
3	economic.tw.	23373
4	or/1-3	23646
5	(metabolic adj cost).tw.	0

6	((energy or oxygen) adj cost).tw.	0
7	4 not (5 or 6)	23646
8	INFANT, PREMATURE/	77
9	preterm$.tw.	79
10	INFANT, NEWBORN/	861
11	(newborn$ or neonate$).tw.	925
12	or/8-11	948
13	HYPERBILIRUBINEMIA/	2
14	HYPERBILIRUBINEMIA, NEONATAL/	1
15	hyperbilirubin?emia$.ti.	1
16	bilirubin?emia$.ti.	0
17	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	0
18	exp JAUNDICE/	5
19	jaundice$.ti.	8
20	or/13-19	14
21	THYROID FUNCTION TESTS/	1
22	TSH.tw.	8
23	(thyroid adj3 stimulating adj3 hormone$).tw.	12
24	(thyroidstimulating adj3 hormone$).tw.	0
25	thyrotropin.ti.	2
26	(urine adj3 reducing adj3 substance$).tw.	0
27	ASPARTATE AMINOTRANSFERASES/bl	1
28	AST.ti.	0
29	ALANINE TRANSAMINASE/bl	10

30 ALT.ti.	0
31 ALAKALINE PHOSPHATASE/bl	0
32 ALP.ti.	0
33 GAMMA-GLUTAMYLTRANSFERASE/bl	0
34 GGT.ti.	0
35 HEMOGLOBINS/	34
36 h?emoglobin$.ti.	14
37 HEMATOCRIT/	17
38 h?ematocrit$.ti.	1
39 (peripheral adj3 blood adj3 smear$).tw.	0
40 RETICULOCYTE COUNT/	3
41 (reticulocyte$ adj3 (count$ or number$)).tw.	7
42 BLOOD GAS ANALYSIS/	9
43 (blood adj3 gas$).ti.	3
44 (ABG and arterial).tw.	3
45 SERUM ALBUMIN/	13
46 ((serum or plasma) adj3 albumin).tw.	29
47 (total adj3 serum adj3 bilirubin$).tw.	5
48 (serum adj3 bilirubin$ adj3 level$).tw.	5
49 tsb.tw.	0
50 BILIRUBIN/bl [Blood]	4
51 (unconjugated adj3 bilirubin).tw.	0
52 (split adj3 bilirubin).tw.	0
53 URINALYSIS/	24

54	(urine adj3 (test$ or check$ or analys?s or level$)).tw.	50
55	or/21-54	209
56	and/7,12,20,55	3

Question: How effective is phototherapy?Restricted to SRs, meta-analysis and controlled trials

Ovid MEDLINE(R) 1950 to October Week 1 2008

JAUN_phototherapy_medline_131008

#	Searches	Results
1	randomized controlled trial.pt.	266806
2	controlled clinical trial.pt.	80365
3	DOUBLE BLIND METHOD/	100865
4	SINGLE BLIND METHOD/	12612
5	RANDOM ALLOCATION/	63127
6	RANDOMIZED CONTROLLED TRIALS/	57538
7	or/1-6	450144
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	98482
9	clinical trial.pt.	459524
10	exp CLINICAL TRIAL/	567163
11	exp CLINICAL TRIALS AS TOPIC/	213054

12	(clinic$ adj5 trial$).tw,sh.	133527
13	PLACEBOS/	28238
14	placebo$.tw,sh.	127827
15	random$.tw,sh.	565894
16	or/8-15	993442
17	or/7,16	998089
18	META ANALYSIS/	19747
19	META ANALYSIS AS TOPIC/	8778
20	meta analysis.pt.	19747
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	34987
22	(systematic$ adj5 (review$ or overview$)).tw,sh.	18625
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	1956
24	or/18-23	48895
25	review$.pt.	1430230
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw.	31879
27	((hand or manual$) adj2 search$).tw.	3522
28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	5442
29	(pooling or pooled or mantel haenszel).tw,sh.	30059
30	(peto or dersimonian or der simonian or fixed effect).tw,sh.	1397
31	or/26-30	63968
32	and/25,31	27218
33	or/24,32	64812

34	letter.pt.	650354
35	case report.tw.	138957
36	comment.pt.	372091
37	editorial.pt.	231976
38	historical article.pt.	257421
39	or/34-38	1320137
40	17 not 39	961091
41	33 not 39	61188
42	**or/40-41**	**992333**
43	INFANT, PREMATURE/	33074
44	preterm$.tw.	29486
45	INFANT, NEWBORN/	426267
46	(newborn$ or neonate$).tw.	139364
47	**or/43-46**	**484217**
48	exp PHOTOTHERAPY/	20273
49	JAUNDICE, NEONATAL/th [Therapy]	1470
50	LIGHT/th [Therapy]	7
51	(light adj3 therap$).tw.	1488
52	(photoradiation adj3 therap$).tw.	176
53	bilibed.tw.	7
54	biliblanket$.tw.	12
55	(wallaby or wallabies).tw.	918
56	(optic adj2 fibre$).tw.	1075
57	light.ti.	55786

58	(hill?rom adj microlite).tw.	0
59	hill rom microlite.tw.	0
60	(Draeger adj2 phototherap$).tw.	0
61	medestime.tw.	0
62	neoblue$.tw.	2
63	light emitting diode$.tw.	1280
64	(LED and light).tw.	5808
65	(fluorescen$ adj3 light$).tw.	3557
66	(halogen adj3 light$).tw.	342
67	(sunlight or heliotherap$).tw.	5119
68	ohmeda.tw.	382
69	medela.tw.	12
70	**or/48-69**	**89832**
71	and/42,47,70	276

EBM Reviews - Cochrane Central Register of Controlled Trials 3rd Quarter 2008

JAUN_phototherapy_cctr_131008

#	Searches	Results
1	randomized controlled trial.pt.	246310
2	controlled clinical trial.pt.	75338
3	DOUBLE BLIND METHOD/	81099

4	SINGLE BLIND METHOD/	7643
5	RANDOM ALLOCATION/	20221
6	RANDOMIZED CONTROLLED TRIALS/	0
7	or/1-6	317038
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	106559
9	clinical trial.pt.	273458
10	exp CLINICAL TRIAL/	0
11	exp CLINICAL TRIALS AS TOPIC/	0
12	(clinic$ adj5 trial$).tw,sh.	35204
13	PLACEBOS/	18244
14	placebo$.tw,sh.	105601
15	random$.tw,sh.	241696
16	or/8-15	386437
17	or/7,16	397360
18	META ANALYSIS/	0
19	META ANALYSIS AS TOPIC/	171
20	meta analysis.pt.	476
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	1056
22	(systematic$ adj5 (review$ or overview$)).tw,sh.	250
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	26
24	or/18-23	1452
25	review$.pt.	2654
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw.	406

27	((hand or manual$) adj2 search$).tw.	38
28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	61
29	(pooling or pooled or mantel haenszel).tw,sh.	2046
30	(peto or dersimonian or der simonian or fixed effect).tw,sh.	31
31	or/26-30	2491
32	and/25,31	93
33	or/24,32	1515
34	letter.pt.	4483
35	case report.tw.	149
36	comment.pt.	1562
37	editorial.pt.	280
38	historical article.pt.	58
39	or/34-38	5258
40	17 not 39	392251
41	33 not 39	1481
42	or/40-41	392505
43	INFANT, PREMATURE/	1709
44	preterm$.tw.	3074
45	INFANT, NEWBORN/	8435
46	(newborn$ or neonate$).tw.	4189
47	or/43-46	11391
48	exp PHOTOTHERAPY/	1159
49	JAUNDICE, NEONATAL/th [Therapy]	94
50	LIGHT/th [Therapy]	0

51 (light adj3 therap$).tw.	273
52 (photoradiation adj3 therap$).tw.	0
53 bilibed.tw.	1
54 biliblanket$.tw.	8
55 (wallaby or wallabies).tw.	5
56 (optic adj2 fibre$).tw.	44
57 light.ti.	1135
58 (hill?rom adj microlite).tw.	0
59 hill rom microlite.tw.	0
60 (Draeger adj2 phototherap$).tw.	0
61 medestime.tw.	0
62 neoblue$.tw.	0
63 light emitting diode$.tw.	50
64 (LED and light).tw.	127
65 (fluorescen$ adj3 light$).tw.	80
66 (halogen adj3 light$).tw.	30
67 (sunlight or heliotherap$).tw.	129
68 ohmeda.tw.	58
69 medela.tw.	2
70 or/48-69	2445
71 and/42,47,70	164

DARE, CDSR

JAUN_phototherapy_cdsrdare_131008

#	Searches	Results
1	randomized controlled trial.pt.	0
2	controlled clinical trial.pt.	0
3	DOUBLE BLIND METHOD.kw.	225
4	SINGLE BLIND METHOD.kw.	16
5	RANDOM ALLOCATION.kw.	11
6	RANDOMIZED CONTROLLED TRIALS.kw.	5625
7	or/1-6	5668
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	3814
9	clinical trial.pt.	0
10	CLINICAL TRIAL.kw.	0
11	CLINICAL TRIALS AS TOPIC.kw.	124
12	(clinic$ adj5 trial$).tw,sh.	5952
13	PLACEBOS.kw.	107
14	placebo$.tw,sh.	5335
15	random$.tw,sh.	11318
16	or/8-15	11713
17	or/7,16	11713
18	META ANALYSIS.kw.	159
19	META ANALYSIS AS TOPIC.kw.	26
20	meta analysis.pt.	0
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	7880

22	(systematic$ adj5 (review$ or overview$)).tw,sh.	7752
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	2902
24	or/18-23	11535
25	review$.pt.	0
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw.	11215
27	((hand or manual$) adj2 search$).tw.	1874
28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	2540
29	(pooling or pooled or mantel haenszel).tw,sh.	5741
30	(peto or dersimonian or der simonian or fixed effect).tw,sh.	3818
31	or/26-30	11382
32	and/25,31	0
33	or/24,32	11535
34	letter.pt.	0
35	case report.tw.	114
36	comment.pt.	0
37	editorial.pt.	0
38	historical article.pt.	0
39	or/34-38	114
40	17 not 39	11613
41	33 not 39	11439
42	or/40-41	12882
43	INFANT, PREMATURE.kw.	207

44 preterm$.tw,tx.	560
45 INFANT, NEWBORN.kw.	595
46 (newborn$ or neonate$).tw,tx.	954
47 or/43-46	1104
48 PHOTOTHERAPY.kw.	21
49 JAUNDICE, NEONATAL.kw.	7
50 LIGHT.kw.	11
51 (light adj3 therap$).tw,tx.	51
52 (photoradiation adj3 therap$).tw,tx.	0
53 bilibed$.tw,tx.	0
54 biliblanket$.tw,tx.	1
55 (wallaby or wallabies).tw,tx.	1
56 (optic adj2 fibre$).tw,tx.	12
57 light.ti.	15
58 (hill?rom adj microlite).tw,tx.	0
59 hill rom microlite.tw,tx.	0
60 (Draeger adj2 phototherap$).tw,tx.	0
61 medestime.tw,tx.	0
62 neoblue$.tw,tx.	0
63 light emitting diode$.tw,tx.	2
64 (LED and light).tw,tx.	250
65 (fluorescen$ adj3 light$).tw,tx.	5
66 (halogen adj3 light$).tw,tx.	1
67 (sunlight or heliotherap$).tw,tx.	30

68	ohmeda.tw,tx.	2
69	medela.tw.	0
70	or/48-69	352
71	and/42,47,70	42

EMBASE 1980 to 2008 Week 41

JAUN_phototherapy_embase_131008

#	Searches	Results
1	CLINICAL TRIALS/	519099
2	(clinic$ adj5 trial$).ti,ab,sh.	122674
3	SINGLE BLIND PROCEDURE/	7849
4	DOUBLE BLIND PROCEDURE/	70766
5	RANDOM ALLOCATION/	26330
6	CROSSOVER PROCEDURE/	20737
7	PLACEBO/	118995
8	placebo$.ti,ab,sh.	169680
9	random$.ti,ab,sh.	421609
10	RANDOMIZED CONTROLLED TRIALS/	163322
11	((single or double or triple or treble) adj (blind$ or mask$)).ti,ab,sh.	91962
12	randomi?ed control$ trial$.tw.	31938
13	or/1-12	850569
14	META ANALYSIS/	34138

15	((meta adj analy$) or metaanalys$ or meta-analy$).ti,ab,sh.	43611
16	(systematic$ adj5 (review$ or overview$)).ti,sh,ab.	26234
17	(methodologic$ adj5 (review$ or overview$)).ti,ab,sh.	1612
18	or/14-17	60164
19	review.pt.	898679
20	(medline or medlars or embase).ab.	22858
21	(scisearch or science citation index).ab.	708
22	(psychlit or psyclit or psychinfo or psycinfo or cinahl or cochrane).ab.	8291
23	((hand or manual$) adj2 search$).tw.	2626
24	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw.	4204
25	(pooling or pooled or mantel haenszel).tw.	24298
26	(peto or dersimonian or "der simonian" or fixed effect).tw.	869
27	or/20-26	51485
28	and/19,27	18247
29	or/18,28	70345
30	(book or conference paper or editorial or letter or note or proceeding or short survey).pt.	1703378
31	13 not 30	727892
32	29 not 31	32871
33	or/31-32	760763
34	PREMATURITY/	28948
35	preterm$.tw.	26247
36	NEWBORN/	177181

37 (newborn$ or neonate$).tw.	96416
38 or/34-37	237226
39 exp Phototherapy/	23625
40 (light adj3 therap$).tw.	1258
41 (photoradiati$ adj3 therap$).tw.	129
42 bilibed$.tw.	3
43 biliblanket$.tw.	11
44 (wallaby or wallabies).tw.	635
45 (optic adj2 fibre$).tw.	902
46 exp Light/	52208
47 (hill?rom adj microlite).tw.	0
48 hill rom microlite.tw.	0
49 (Draeger adj2 phototherap$).tw.	0
50 medestime.tw.	0
51 neoblue$.tw.	1
52 light emitting diode$.tw.	1150
53 (LED and light).tw.	4841
54 (fluorescen$ adj3 light$).tw.	2577
55 (halogen adj3 light$).tw.	93
56 (sunlight or heliotherap$).tw.	4612
57 ohmeda.tw.	410
58 medela.tw.	4
59 or/39-58	84117
60 and/33,38,59	217

EMBASE 1980 to 2008 Week 46

JAUN_phototherapy_outcomes_Q6p4_embase_201108

#	Searches	Results
1	PREMATURITY/	29089
2	preterm$.tw.	26428
3	NEWBORN/	177774
4	(newborn$ or neonate$).tw.	96829
5	or/1-4	238203
6	HYPERBILIRUBINEMIA/	5668
7	hyperbilirubin?emia$.ti.	1055
8	bilirubin?emia$.ti.	15
9	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	247
10	JAUNDICE/	9750
11	NEWBORN JAUNDICE/	1734
12	jaundice$.ti.	3635
13	KERNICTERUS/	708
14	kernicterus$.ti.	149
15	or/6-14	18031

16 exp Phototherapy/	23828
17 (light adj3 therap$).tw.	1262
18 bilibed$.tw.	3
19 biliblanket$.tw.	11
20 (wallaby or wallabies).tw.	638
21 (optic adj2 fibre$).tw.	904
22 exp Light/	52506
23 (hill?rom adj microlite).tw.	0
24 hill rom microlite.tw.	0
25 (Draeger adj2 phototherap$).tw.	0
26 medestime.tw.	0
27 neoblue$.tw.	1
28 light emitting diode$.tw.	1162
29 (LED and light).tw.	4864
30 (fluorescen$ adj3 light$).tw.	2586
31 (halogen adj3 light$).tw.	93
32 (sunlight or heliotherap$).tw.	4637
33 or/16-32	84205
34 mother child relation/	6667
35 object relation/	2475
36 (bonding or bond$).tw.	88835
37 (concern$ or worry or worries).tw.	212424
38 Anxiety/	46655
39 (satisfaction or satisf$).tw.	114088

40	bottle feeding/ or breast feeding/	14406
41	feed$.tw.	126279
42	enteric feeding/ or exp parenteral nutrition/	23201
43	((continu$ or intermitt$) adj3 feed$).tw.	1729
44	or/34-43	601172
45	and/5,15,33,44	115

CINAHL - Cumulative Index to Nursing & Allied Health Literature 1982 to October Week 2 2008

JAUN_phototherapy_cinahl_131008

#	Searches	Results
1	exp CLINICAL TRIALS/	66624
2	clinical trial.pt.	35279
3	(clinic$ adj5 trial$).tw,sh.	16386
4	SINGLE-BLIND STUDIES/	3168
5	DOUBLE-BLIND STUDIES/	12147
6	TRIPLE-BLIND STUDIES/	40
7	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	9029
8	RANDOM ASSIGNMENT/	19554
9	random$.tw.	58620
10	RANDOMIZED CONTROLLED TRIALS/	51717
11	randomi?ed control$ trial$.tw.	12888

12	PLACEBOS/	4737
13	placebo$.tw.	12335
14	or/1-13	107525
15	META ANALYSIS/	7066
16	((meta adj analy$) or metaanalys$ or meta-analy$).tw.	5613
17	SYSTEMATIC REVIEW/	4025
18	systematic review.pt.	12734
19	(systematic$ adj5 (review$ or overview$)).tw.	10107
20	LITERATURE REVIEW/	2606
21	or/15-20	23859
22	("review" or "review studies" or "review academic" or "review tutorial").ti,ab,sh,pt.	118973
23	(medline or medlars or embase or cochrane or scisearch or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation").tw.	10394
24	((hand or manual$) adj2 search$).tw.	1132
25	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw.	1978
26	(pooling or pooled or mantel haenszel).tw.	2938
27	(peto or dersimonian or "der simonian" or fixed effect).tw.	450
28	or/23-27	13738
29	and/22,28	8053
30	or/14,21,29	122343
31	letter.pt.	66262
32	commentary.pt.	87950
33	editorial.pt.	93450

34	or/31-33	199889
35	30 not 34	108809
36	INFANT, PREMATURE/	6269
37	preterm$.tw.	5354
38	INFANT, NEWBORN/	39183
39	(newborn$ or neonate$).tw.	9909
40	or/36-39	44090
41	Phototherapy/	673
42	Light/tu [Therapeutic use]	50
43	(light adj3 therap$).tw.	168
44	(photoradiati$ adj3 therap$).tw.	2
45	bilibed$.tw.	0
46	biliblanket$.tw.	5
47	(wallaby or wallabies).tw.	3
48	(optic adj2 fibre).tw.	32
49	light.tw.	9109
50	(hill?rom adj microlite).tw.	0
51	hill rom microlite.tw.	0
52	(Draeger adj2 phototherap$).tw.	0
53	medestime.tw.	0
54	neoblue$.tw.	1
55	light emitting diode$.tw.	50
56	(LED and light).tw.	182
57	(fluorescen$ adj3 light$).tw.	97

58 (halogen adj3 light$).tw.	23
59 (sunlight or heliotherap$).tw.	248
60 ohmeda.tw.	35
61 medela.tw.	1
62 or/41-61	9911
63 and/35,40,62	59

CINAHL EBSCO

JAUN_phototherapy_cinahl_131008

Tuesday, July 21, 2009 7:46:53 AM

#	Query	Limiters/ Expanders	Last Run Via	Results
S31	S30 and S5	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S30	S29 or S28 or S27 or S26 or S25 or S24 or S23 or S22 or S21 or S16 or S15 or S14 or S13 or S12 or S11 or S9 or S8 or S7 or S6	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S29	(TI "medela") or (AB	Search modes -	Interface - EBSCOhost	Display

	"medela")	Boolean/Phrase	Search Screen - Advanced Search Database - CINAHL with Full Text	
S28	(TI "ohmeda") or (AB "ohmeda")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S27	(TI "sunlight" or "heliotherap*") or (AB "sunlight" or "heliotherap*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S26	(TI "halogen" N3 "light*") or (AB "halogen" N3 "light*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S25	(TI "fluorescen*" N3 "light") or (AB "fluorescen*" N3 "light")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S24	(AB "LED" and "light")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S23	(TI "LED" and "light")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S22	(TI "light emitting diode*") or (AB "light emitting diode*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S21	(TI "neoblue*") or (AB "neoblue*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S20	(TI "medestime") or (AB "medestime")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S19	(TI "draeger" N2 "phototherap*") or (AB "draeger" N2 "phototherap*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S18	(TI "hillrom microlite") or (AB "hillrom microlite")	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S17	(TI "hillrom" N2 "microlite") or (AB "hillrom" N2 "microlite")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S16	(TI "light") or (AB "light")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S15	(AB "optic" N2 "fibre*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S14	TI ("optic" N2 "fibre*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S13	(AB "wallaby" or "wallabies")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S12	(TI "wallaby" or "wallabies")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S11	(TI "biliblanket*") or (AB "biliblanket*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S10	(TI "bilibed*") or (AB "bilibed*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S9	(TI "photoradiati*" N3 "therap*") or (AB "photoradiati*" N3 "therap*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S8	(TI light N3 therap*) or (AB light N3 therap*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S7	MH "LIGHT/tu"	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S6	MH PHOTOTHERAPY	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

Question: **How effective is phototherapy? Economic evaluation**

Ovid MEDLINE(R) 1950 to October Week 1 2008

JAUN_phototherapy_economic_medline_141008

#	Searches	Results
1	costs.tw.	77859
2	cost effective$.tw.	44745
3	economic.tw.	67051
4	or/1-3	164703
5	(metabolic adj cost).tw.	492
6	((energy or oxygen) adj cost).tw.	2055
7	4 not (5 or 6)	164469
8	INFANT, PREMATURE/	33074
9	preterm$.tw.	29486
10	INFANT, NEWBORN/	426267

11	(newborn$ or neonate$).tw.	139364
12	or/8-11	484217
13	exp PHOTOTHERAPY/	20273
14	JAUNDICE, NEONATAL/th [Therapy]	1470
15	LIGHT/th [Therapy]	7
16	(light adj3 therap$).tw.	1488
17	(photoradiation adj3 therap$).tw.	176
18	bilibed.tw.	7
19	biliblanket$.tw.	12
20	(wallaby or wallabies).tw.	918
21	(optic adj2 fibre$).tw.	1075
22	light.ti.	55786
23	(hill?rom adj microlite).tw.	0
24	hill rom microlite.tw.	0
25	(Draeger adj2 phototherap$).tw.	0
26	medestime.tw.	0
27	neoblue$.tw.	2
28	light emitting diode$.tw.	1280
29	(LED and light).tw.	5808
30	(fluorescen$ adj3 light$).tw.	3557
31	(halogen adj3 light$).tw.	342
32	(sunlight or heliotherap$).tw.	5119
33	ohmeda.tw.	382
34	medela.tw.	12

35	or/13-34	89832
36	and/7,12,35	25

EBM Reviews - Cochrane Central Register of Controlled Trials 3rd Quarter 2008

JAUN_phototherapy_economic_cctr_141008

#	Searches	Results
1	costs.tw.	5410
2	cost effective$.tw.	4135
3	economic.tw.	2275
4	or/1-3	8908
5	(metabolic adj cost).tw.	38
6	((energy or oxygen) adj cost).tw.	178
7	4 not (5 or 6)	8898
8	INFANT, PREMATURE/	1709
9	preterm$.tw.	3074
10	INFANT, NEWBORN/	8435
11	(newborn$ or neonate$).tw.	4189
12	or/8-11	11391
13	exp PHOTOTHERAPY/	1159
14	JAUNDICE, NEONATAL/th [Therapy]	94
15	LIGHT/th [Therapy]	0

16 (light adj3 therap$).tw.	273
17 (photoradiation adj3 therap$).tw.	0
18 bilibed.tw.	1
19 biliblanket$.tw.	8
20 (wallaby or wallabies).tw.	5
21 (optic adj2 fibre$).tw.	44
22 light.ti.	1135
23 (hill?rom adj microlite).tw.	0
24 hill rom microlite.tw.	0
25 (Draeger adj2 phototherap$).tw.	0
26 medestime.tw.	0
27 neoblue$.tw.	0
28 light emitting diode$.tw.	50
29 (LED and light).tw.	127
30 (fluorescen$ adj3 light$).tw.	80
31 (halogen adj3 light$).tw.	30
32 (sunlight or heliotherap$).tw.	129
33 ohmeda.tw.	58
34 medela.tw.	2
35 or/13-34	2445
36 and/7,12,35	2

EBM Reviews - Health Technology Assessment 4th Quarter 2008

JAUN_phototherapy_economic_hta_141008

#	Searches	Results
1	costs.tw.	1172
2	cost effective$.tw.	940
3	economic.tw.	698
4	or/1-3	1688
5	(metabolic adj cost).tw.	0
6	((energy or oxygen) adj cost).tw.	0
7	4 not (5 or 6)	1688
8	INFANT, PREMATURE/	9
9	preterm$.tw.	24
10	INFANT, NEWBORN/	66
11	(newborn$ or neonate$).tw.	102
12	or/8-11	125
13	exp PHOTOTHERAPY/	72
14	JAUNDICE, NEONATAL/th [Therapy]	0
15	LIGHT/th [Therapy]	0
16	(light adj3 therap$).tw.	12
17	(photoradiation adj3 therap$).tw.	0
18	bilibed.tw.	0
19	biliblanket$.tw.	0
20	(wallaby or wallabies).tw.	0
21	(optic adj2 fibre$).tw.	0

22	light.ti.	11
23	(hill?rom adj microlite).tw.	0
24	hill rom microlite.tw.	0
25	(Draeger adj2 phototherap$).tw.	0
26	medestime.tw.	0
27	neoblue$.tw.	0
28	light emitting diode$.tw.	0
29	(LED and light).tw.	0
30	(fluorescen$ adj3 light$).tw.	0
31	(halogen adj3 light$).tw.	0
32	(sunlight or heliotherap$).tw.	2
33	ohmeda.tw.	0
34	medela.tw.	0
35	or/13-34	79
36	and/7,12,35	0

EBM Reviews - NHS Economic Evaluation Database 3rd Quarter 2008

JAUN_phototherapy_economic_nhseed_141008

#	Searches	Results
1	costs.tw.	17348
2	cost effective$.tw.	8488
3	economic.tw.	23373

4	or/1-3	23646
5	(metabolic adj cost).tw.	0
6	((energy or oxygen) adj cost).tw.	0
7	4 not (5 or 6)	23646
8	INFANT, PREMATURE/	77
9	preterm$.tw.	79
10	INFANT, NEWBORN/	861
11	(newborn$ or neonate$).tw.	925
12	or/8-11	948
13	exp PHOTOTHERAPY/	38
14	JAUNDICE, NEONATAL/th [Therapy]	0
15	LIGHT/th [Therapy]	0
16	(light adj3 therap$).tw.	0
17	(photoradiation adj3 therap$).tw.	0
18	bilibed.tw.	0
19	biliblanket$.tw.	0
20	(wallaby or wallabies).tw.	0
21	(optic adj2 fibre$).tw.	8
22	light.ti.	8
23	(hill?rom adj microlite).tw.	0
24	hill rom microlite.tw.	0
25	(Draeger adj2 phototherap$).tw.	0
26	medestime.tw.	0
27	neoblue$.tw.	0

28	light emitting diode$.tw.	0
29	(LED and light).tw.	15
30	(fluorescen$ adj3 light$).tw.	1
31	(halogen adj3 light$).tw.	0
32	(sunlight or heliotherap$).tw.	6
33	ohmeda.tw.	0
34	medela.tw.	0
35	or/13-34	74
36	and/7,12,35	2

EMBASE 1980 to 2008 Week 41

JAUN_phototherapy_economic_embase_141008

#	Searches	Results
1	costs.tw.	64077
2	cost effective$.tw.	40727
3	economic.tw.	53047
4	or/1-3	133824
5	(metabolic adj cost).tw.	378
6	((energy or oxygen) adj cost).tw.	1676
7	4 not (5 or 6)	133650
8	PREMATURITY/	28948
9	preterm$.tw.	26247

10 NEWBORN/	177181
11 (newborn$ or neonate$).tw.	96416
12 or/8-11	237226
13 exp Phototherapy/	23625
14 (light adj3 therap$).tw.	1258
15 (photoradiati$ adj3 therap$).tw.	129
16 bilibed$.tw.	3
17 biliblanket$.tw.	11
18 (wallaby or wallabies).tw.	635
19 (optic adj2 fibre$).tw.	902
20 exp Light/	52208
21 (hill?rom adj microlite).tw.	0
22 hill rom microlite.tw.	0
23 (Draeger adj2 phototherap$).tw.	0
24 medestime.tw.	0
25 neoblue$.tw.	1
26 light emitting diode$.tw.	1150
27 (LED and light).tw.	4841
28 (fluorescen$ adj3 light$).tw.	2577
29 (halogen adj3 light$).tw.	93
30 (sunlight or heliotherap$).tw.	4612
31 ohmeda.tw.	410
32 medela.tw.	4
33 or/13-32	84117

34	and/7,12,33	17

Question: What is the correct procedure of giving phototherapy? Focus on the methods of feeding, types of feeding, maternal-infant bonding etc. Question 6.4.

Ovid MEDLINE(R) 1950 to November Week 2 2008

JAUN_phototherapy_outcomes_Q6p4_medline_201108

#	Searches	Results
1	INFANT, PREMATURE/	33276
2	preterm$.tw.	29760
3	INFANT, NEWBORN/	428448
4	(newborn$ or neonate$).tw.	140387
5	or/1-4	486947
6	HYPERBILIRUBINEMIA/	3447
7	HYPERBILIRUBINEMIA, NEONATAL/	184
8	hyperbilirubin?emia$.ti.	2213
9	bilirubin?emia$.ti.	149
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	289
11	exp JAUNDICE/	10168
12	jaundice$.ti.	9929
13	KERNICTERUS/	904

14 kernicter$.tw.	691
15 or/6-14	20919
16 exp PHOTOTHERAPY/	20437
17 JAUNDICE, NEONATAL/th [Therapy]	1472
18 LIGHT/th [Therapy]	8
19 (light adj3 therap$).tw.	1497
20 (photoradiation adj3 therap$).tw.	177
21 bilibed.tw.	7
22 biliblanket$.tw.	12
23 (wallaby or wallabies).tw.	936
24 (optic adj2 fibre$).tw.	1080
25 light.ti.	56299
26 (hill?rom adj microlite).tw.	0
27 hill rom microlite.tw.	0
28 (Draeger adj2 phototherap$).tw.	0
29 medestime.tw.	0
30 neoblue$.tw.	2
31 light emitting diode$.tw.	1300
32 (LED and light).tw.	5872
33 (fluorescen$ adj3 light$).tw.	3594
34 (halogen adj3 light$).tw.	348
35 (sunlight or heliotherap$).tw.	5169
36 ohmeda.tw.	384
37 medela.tw.	13

38	or/16-37	90649
39	OBJECT ATTACHMENT/ or MOTHER-CHILD RELATIONS/	19598
40	bond$.tw.	104651
41	(concern$ or worry or worries).tw.	261312
42	ANXIETY/	37869
43	(satisfaction or satisf$).tw.	138678
44	BOTTLE FEEDING/ or BREAST FEEDING/	21543
45	feed$.tw.	180003
46	ENTERAL NUTRITION/ or exp PARENTERAL NUTRITION/	29385
47	((continu$ or intermitt$) adj3 feed$).tw.	2212
48	or/39-47	749138
49	and/5,15,38,48	150

EBM Reviews - Cochrane Central Register of Controlled Trials 4th Quarter 2008

JAUN_phototherapy_outcomes_Q6p4_cctr_201108

#	Searches	Results
1	INFANT, PREMATURE/	1731
2	preterm$.tw.	3132
3	INFANT, NEWBORN/	8524
4	(newborn$ or neonate$).tw.	4271
5	or/1-4	11554

6	HYPERBILIRUBINEMIA/	58
7	HYPERBILIRUBINEMIA, NEONATAL/	10
8	hyperbilirubin?emia$.ti.	149
9	bilirubin?emia$.ti.	4
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
11	exp JAUNDICE/	51
12	jaundice$.ti.	196
13	KERNICTERUS/	2
14	kernicter$.tw.	7
15	or/6-14	443
16	exp PHOTOTHERAPY/	1173
17	JAUNDICE, NEONATAL/th [Therapy]	94
18	LIGHT/th [Therapy]	0
19	(light adj3 therap$).tw.	278
20	(photoradiation adj3 therap$).tw.	0
21	bilibed.tw.	1
22	biliblanket$.tw.	8
23	(wallaby or wallabies).tw.	5
24	(optic adj2 fibre$).tw.	43
25	light.ti.	1148
26	(hill?rom adj microlite).tw.	0
27	hill rom microlite.tw.	0
28	(Draeger adj2 phototherap$).tw.	0
29	medestime.tw.	0

30	neoblue$.tw.	0
31	light emitting diode$.tw.	52
32	(LED and light).tw.	131
33	(fluorescen$ adj3 light$).tw.	82
34	(halogen adj3 light$).tw.	31
35	(sunlight or heliotherap$).tw.	132
36	ohmeda.tw.	58
37	medela.tw.	2
38	or/16-37	2478
39	OBJECT ATTACHMENT/ or MOTHER-CHILD RELATIONS/	391
40	bond$.tw.	1299
41	(concern$ or worry or worries).tw.	8669
42	ANXIETY/	3210
43	(satisfaction or satisf$).tw.	10962
44	BOTTLE FEEDING/ or BREAST FEEDING/	850
45	feed$.tw.	6812
46	ENTERAL NUTRITION/ or exp PARENTERAL NUTRITION/	1981
47	((continu$ or intermitt$) adj3 feed$).tw.	220
48	or/39-47	31506
49	and/5,15,38,48	12

DARE, CDSR

JAUN_phototherapy_outcomes_Q6p4_cdsrdare_201108

#	Searches	Results
1	INFANT, PREMATURE.kw.	215
2	preterm$.tw,tx.	567
3	INFANT, NEWBORN.kw.	612
4	(newborn$ or neonate$).tw,tx.	975
5	or/1-4	1127
6	HYPERBILIRUBINEMIA.kw.	3
7	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
8	hyperbilirubin?emia$.ti.	2
9	bilirubin?emia$.ti.	0
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw,tx.	5
11	JAUNDICE.kw.	13
12	jaundice$.ti.	10
13	KERNICTERUS.kw.	1
14	kernicter$.tw,tx.	14
15	or/6-14	23
16	PHOTOTHERAPY.kw.	21
17	LIGHT.kw.	11
18	(light adj3 therap$).tw,tx.	52
19	(photoradiation adj3 therap$).tw,tx.	0
20	bilibed.tw,tx.	0
21	biliblanket$.tw,tx.	1
22	(wallaby or wallabies).tw,tx.	1

23	(optic adj2 fibre$).tw,tx.	12
24	light.ti.	15
25	(hill?rom adj microlite).tw,tx.	0
26	hill rom microlite.tw,tx.	0
27	(Draeger adj2 phototherap$).tw,tx.	0
28	medestime.tw,tx.	0
29	neoblue$.tw,tx.	0
30	light emitting diode$.tw,tx.	2
31	(LED and light).tw.	250
32	(fluorescen$ adj3 light$).tw,tx.	5
33	(halogen adj3 light$).tw,tx.	1
34	(sunlight or heliotherap$).tw,tx.	30
35	ohmeda.tw,tx.	2
36	medela.tw,tx.	0
37	or/16-36	348
38	(OBJECT ATTACHMENT or MOTHER-CHILD RELATIONS).kw.	20
39	bond$.tw,tx.	156
40	(concern$ or worry or worries).tw,tx.	3076
41	ANXIETY.kw.	192
42	(satisfaction or satisf$).tw,tx.	2376
43	(BOTTLE FEEDING or BREAST FEEDING).kw.	33
44	feed$.tw,tx.	1244
45	(ENTERAL NUTRITION or PARENTERAL NUTRITION).kw.	95
46	((continu$ or intermitt$) adj3 feed$).tw,tx.	39

47	or/38-46	5034
48	and/5,15,37,47	2

EMBASE 1980 to 2008 Week 47

JAUN_phototherapy_outcomes_Q6p4_embase_201108

#	Searches	Results
1	PREMATURITY/	29115
2	preterm$.tw.	26455
3	NEWBORN/	177875
4	(newborn$ or neonate$).tw.	96908
5	or/1-4	238370
6	HYPERBILIRUBINEMIA/	5678
7	hyperbilirubin?emia$.ti.	1055
8	bilirubin?emia$.ti.	15
9	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	247
10	JAUNDICE/	9769
11	NEWBORN JAUNDICE/	1734
12	jaundice$.ti.	3639
13	KERNICTERUS/	709
14	kernicterus$.ti.	149
15	or/6-14	18063
16	exp Phototherapy/	23879

17 (light adj3 therap$).tw.	1267
18 bilibed$.tw.	3
19 biliblanket$.tw.	11
20 (wallaby or wallabies).tw.	638
21 (optic adj2 fibre$).tw.	905
22 exp Light/	52569
23 (hill?rom adj microlite).tw.	0
24 hill rom microlite.tw.	0
25 (Draeger adj2 phototherap$).tw.	0
26 medestime.tw.	0
27 neoblue$.tw.	1
28 light emitting diode$.tw.	1162
29 (LED and light).tw.	4873
30 (fluorescen$ adj3 light$).tw.	2590
31 (halogen adj3 light$).tw.	94
32 (sunlight or heliotherap$).tw.	4646
33 or/16-32	84324
34 mother child relation/	6677
35 object relation/	2477
36 (bonding or bond$).tw.	88939
37 (concern$ or worry or worries).tw.	212699
38 Anxiety/	46734
39 (satisfaction or satisf$).tw.	114247
40 bottle feeding/ or breast feeding/	14436

41	feed$.tw.	126456
42	enteric feeding/ or exp parenteral nutrition/	23218
43	((continu$ or intermitt$) adj3 feed$).tw.	1731
44	or/34-43	601976
45	and/5,15,33,44	115

CINAHL - Cumulative Index to Nursing & Allied Health Literature 1982 to November Week 2 2008

JAUN_phototherapy_outcomes_Q6p4_cinahl_201108

#	Searches	Results
1	INFANT, PREMATURE/	6307
2	preterm$.tw.	5404
3	INFANT, NEWBORN/	39507
4	(newborn$ or neonate$).tw.	10009
5	or/1-4	44471
6	HYPERBILIRUBINEMIA/	219
7	hyperbilirubin?emia$.ti.	143
8	bilirubin?emia$.ti.	1
9	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	27
10	JAUNDICE/	223
11	jaundice$.ti.	304
12	Kernicterus/	102

13 kernicterus$.ti.	41
14 or/6-13	735
15 Phototherapy/	690
16 Light/tu [Therapeutic use]	50
17 (light adj3 therap$).tw.	169
18 (photoradiati$ adj3 therap$).tw.	2
19 bilibed$.tw.	0
20 biliblanket$.tw.	5
21 (wallaby or wallabies).tw.	3
22 (optic adj2 fibre).tw.	32
23 light.tw.	9220
24 (hill?rom adj microlite).tw.	0
25 hill rom microlite.tw.	0
26 (Draeger adj2 phototherap$).tw.	0
27 medestime.tw.	0
28 neoblue$.tw.	1
29 light emitting diode$.tw.	50
30 (LED and light).tw.	185
31 (fluorescen$ adj3 light$).tw.	98
32 (halogen adj3 light$).tw.	24
33 (sunlight or heliotherap$).tw.	252
34 ohmeda.tw.	35
35 medela.tw.	1
36 or/15-35	10041

37	Mother-Child Relations/	1943
38	bond$.tw.	1972
39	(concern$ or worry or worries).tw.	42736
40	anxiety/ or separation anxiety/	7970
41	(satisfaction or satisf$).tw.	25117
42	bottle feeding/ or breast feeding/	7865
43	feed$.tw.	13855
44	enteral nutrition/ or exp parenteral nutrition/	4930
45	((continu$ or intermitt$) adj3 feed$).tw.	252
46	or/37-45	96923
47	and/5,14,36,46	32

CINAHL EBSCO

JAUN_phototherapy_outcomes_Q6p4_cinahl_201108

Friday, November 21, 2008 9:44:46 AM

#	Query	Limiters /Expanders	Last Run Via	Results
S31	S30 and S5	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S30	S29 or S28 or S27 or S26 or S25 or S24 or S23 or S22 or S21 or S16 or S15 or S14 or S13 or S12 or S11 or S9 or S8 or S7 or S6	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S29	(TI "medela") or (AB "medela")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S28	(TI "ohmeda") or (AB "ohmeda")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S27	(TI "sunlight" or "heliotherap*") or (AB "sunlight" or "heliotherap*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S26	(TI "halogen" N3 "light*") or (AB "halogen" N3 "light*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S25	(TI "fluorescen*" N3 "light") or (AB "fluorescen*" N3 "light")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S24	(AB "LED" and "light")	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S23	(TI "LED" and "light")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S22	(TI "light emitting diode*") or (AB "light emitting diode*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S21	(TI "neoblue*") or (AB "neoblue*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S20	(TI "medestime") or (AB "medestime")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S19	(TI "draeger" N2 "phototherap*") or (AB "draeger" N2 "phototherap*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S18	(TI "hillrom microlite") or (AB "hillrom microlite")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S17	(TI "hillrom" N2 "microlite") or (AB "hillrom" N2 "microlite")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S16	(TI "light") or (AB "light")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S15	(AB "optic" N2 "fibre*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S14	TI ("optic" N2 "fibre*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S13	(AB "wallaby" or "wallabies")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S12	(TI "wallaby" or "wallabies")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S11	(TI "biliblanket*") or (AB "biliblanket*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S10	(TI "bilibed*") or (AB "bilibed*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S9	(TI "photoradiati*" N3 "therap*") or (AB "photoradiati*" N3 "therap*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S8	(TI light N3 therap*) or (AB light N3 therap*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S7	MH "LIGHT/tu"	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S6	MH PHOTOTHERAPY	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

Question: **Is it beneficial to give additional fluids during treatment with phototherapy?**

Ovid MEDLINE(R) 1950 to November Week 3 2008

JAUN_fluids2_phototherapy_Q7_medline_081208

#	Searches	Results
1	INFANT, PREMATURE/	33330
2	preterm$.tw.	29802
3	INFANT, NEWBORN/	428896
4	(newborn$ or neonate$).tw.	140553
5	or/1-4	487500
6	HYPERBILIRUBINEMIA/	3451
7	HYPERBILIRUBINEMIA, NEONATAL/	185
8	hyperbilirubin?emia$.ti.	2214
9	bilirubin?emia$.ti.	149
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	290
11	exp JAUNDICE/	10190
12	jaundice$.ti.	9946
13	KERNICTERUS/	905
14	kernicterus.tw.	677
15	or/6-14	20953
16	BOTTLE FEEDING/ or ENTERAL NUTRITION/ or exp PARENTERAL NUTRITION/	32183
17	BREAST FEEDING/	20577
18	feed$.tw.	180353
19	FOOD/	18857
20	food$.tw.	176438
21	((enteral$ or parenteral$ or intravenous$) adj3 (feed$ or food$ or	23560

fluid$ or nutrition$)).tw.

22	fluid$.tw.	259556
23	nutritio$.tw.	122433
24	exp GLUCOSE/	198583
25	dextrose.tw.	6037
26	LACTOSE/	8485
27	exp ELECTROLYTES/	368474
28	exp AMINO ACIDS/	609666
29	exp FATS/	66675
30	exp FATTY ACIDS/	300482
31	fatty.tw.	124979
32	exp INFANT FOOD/	9643
33	(formula$ or supplement$).tw.	251163
34	CASEINS/	11762
35	casein hydrolysate.tw.	549
36	rehydrat$.tw.	4978
37	CALCIUM/	214816
38	CALCIUM, DIETARY/	7543
39	exp VITAMINS/	220605
40	MILK/ or MILK, HUMAN/	47660
41	exp ASPARTIC ACID/	25352
42	aspartic$.tw.	12138
43	exp OROTIC ACID/	3149
44	or/16-43	2515888

45	and/5,15,44	852

EBM Reviews - Cochrane Central Register of Controlled Trials 4th Quarter 2008

JAUN_fluids2_phototherapy_Q7_cctr_081208

#	Searches	Results
1	INFANT, PREMATURE/	1731
2	preterm$.tw.	3132
3	INFANT, NEWBORN/	8524
4	(newborn$ or neonate$).tw.	4271
5	or/1-4	11554
6	HYPERBILIRUBINEMIA/	58
7	HYPERBILIRUBINEMIA, NEONATAL/	10
8	hyperbilirubin?emia$.ti.	149
9	bilirubin?emia$.ti.	4
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
11	exp JAUNDICE/	51
12	jaundice$.ti.	196
13	KERNICTERUS/	2
14	kernicterus.tw.	7
15	or/6-14	443
16	BOTTLE FEEDING/ or ENTERAL NUTRITION/ or exp PARENTERAL NUTRITION/	2111

17	BREAST FEEDING/	787
18	feed$.tw.	6812
19	FOOD/	839
20	food$.tw.	7227
21	((enteral$ or parenteral$ or intravenous$) adj3 (feed$ or food$ or fluid$ or nutrition$)).tw.	3688
22	fluid$.tw.	7847
23	nutritio$.tw.	7413
24	exp GLUCOSE/	9098
25	dextrose.tw.	805
26	LACTOSE/	221
27	exp ELECTROLYTES/	4961
28	exp AMINO ACIDS/	11618
29	exp FATS/	4051
30	exp FATTY ACIDS/	11708
31	fatty.tw.	5015
32	exp INFANT FOOD/	892
33	(formula$ or supplement$).tw.	26606
34	CASEINS/	166
35	casein hydrolysate.tw.	54
36	rehydrat$.tw.	596
37	CALCIUM/	2282
38	CALCIUM, DIETARY/	492
39	exp VITAMINS/	8044
40	MILK/ or MILK, HUMAN/	1142

41	exp ASPARTIC ACID/	202
42	aspartic$.tw.	71
43	exp OROTIC ACID/	19
44	or/16-43	83981
45	and/5,15,44	41

DARE, CDSR

JAUN_fluids2_phototherapy_Q7_cdsrdare_081208

#	Searches	Results
1	INFANT, PREMATURE.kw.	212
2	preterm$.tw,tx.	574
3	INFANT, NEWBORN.kw.	613
4	(newborn$ or neonate$).tw,tx.	996
5	or/1-4	1149
6	HYPERBILIRUBINEMIA.kw.	3
7	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
8	hyperbilirubin?emia$.ti.	2
9	bilirubin?emia$.ti.	0
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw,tx.	5
11	JAUNDICE.kw.	14
12	jaundice$.ti.	10
13	KERNICTERUS.kw.	1

14	kernicterus.tw,tx.	14
15	or/6-14	23
16	(BOTTLE FEEDING or ENTERAL NUTRITION or PARENTERAL NUTRITION).kw.	95
17	BREAST FEEDING.kw.	31
18	feed$.tw,tx.	1286
19	FOOD.kw.	95
20	food$.tw,tx.	871
21	((enteral$ or parenteral$ or intravenous$) adj3 (feed$ or food$ or fluid$ or nutrition$)).tw,tx.	340
22	fluid$.tw,tx.	1079
23	nutritio$.tw,tx.	966
24	GLUCOSE.kw.	101
25	dextrose.tw,tx.	68
26	LACTOSE.kw.	4
27	ELECTROLYTES.kw.	1
28	AMINO ACIDS.kw.	18
29	FATS.kw.	22
30	FATTY ACIDS.kw.	53
31	fatty.tw,tx.	247
32	INFANT FOOD.kw.	14
33	(formula$ or supplement$).tw,tx.	2751
34	CASEINS.kw.	1
35	casein hydrolysate.tw,tx.	4
36	rehydrat$.tw,tx.	67

37	CALCIUM.kw.	139
38	CALCIUM, DIETARY.kw.	24
39	VITAMINS.kw.	58
40	(MILK or MILK, HUMAN).kw.	33
41	ASPARTIC ACID.kw.	1
42	aspartic$.tw,tx.	8
43	OROTIC ACID.kw.	0
44	or/16-43	4816
45	and/5,15,44	10

EMBASE 1980 to 2008 Week 49

JAUN_fluids2_phototherapy_Q7_embase_101208

#	Searches	Results
1	PREMATURITY/	29195
2	preterm$.tw.	26540
3	NEWBORN/	178121
4	(newborn$ or neonate$).tw.	97095
5	or/1-4	238783
6	HYPERBILIRUBINEMIA/	5702
7	HYPERBILIRUBINEMIA, NEONATAL/	1737
8	hyperbilirubin?emia$.ti.	1057

9	bilirubin?emia$.ti.	16
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	248
11	JAUNDICE/	9796
12	NEWBORN JAUNDICE/	1737
13	jaundice$.ti.	3642
14	KERNICTERUS/	710
15	kernicterus$.ti.	150
16	or/6-15	18115
17	Feeding/ or Infant Feeding/ or Breast Feeding/ or Bottle Feeding/ or Intravenous Feeding/ or Enteric Feeding/	34673
18	Parenteral Nutrition/	10281
19	feed$.tw.	126749
20	((enteral$ or parenteral$ or intravenous$) adj3 (feed$ or food$ or fluid$ or nutrition$)).tw.	19593
21	food/ or exp baby food/ or exp infant nutrition/	37365
22	food.tw.	118597
23	nutritio$.tw.	88341
24	liquid/	11439
25	fluid$.tw.	204075
26	Glucose/	112445
27	dextrose.tw.	4974
28	Lactose/	7837
29	Electrolyte/	10764
30	exp Amino Acid/	546350
31	Fat/	9195

32	exp Fatty Acid/	228119
33	fatty.tw.	94352
34	(formula$ or supplement$).tw.	213906
35	Casein/	5248
36	casein hydrolysate.tw.	294
37	rehydrat$.tw.	3774
38	Calcium Intake/ or Calcium/	103005
39	exp Vitamin/	227676
40	Milk/	13462
41	Aspartic Acid/	15849
42	aspartic$.tw.	9533
43	Orotic Acid/	755
44	or/17-43	1731767
45	and/5,16,44	853

CINAHL - Cumulative Index to Nursing & Allied Health Literature 1982 to December Week 1 2008

JAUN_fluids2_phototherapy_Q7_cinahl_101208

#	Searches	Results
1	INFANT, PREMATURE/	6325
2	preterm$.tw.	5427
3	INFANT, NEWBORN/	39649

4	(newborn$ or neonate$).tw.	10060
5	or/1-4	44637
6	HYPERBILIRUBINEMIA/	221
7	hyperbilirubin?emia$.ti.	144
8	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	28
9	JAUNDICE/	225
10	jaundice$.ti.	304
11	KERNICTERUS/	103
12	kernicterus$.ti.	42
13	or/6-12	739
14	BOTTLE FEEDING/ or exp BREAST FEEDING/ or "ENTERAL FEEDING (SABA CCC)"/	7967
15	exp Parenteral Nutrition/	2257
16	feed$.tw.	13941
17	((enteral$ or parenteral$ or intravenous$) adj3 (feed$ or food$ or fluid$ or nutrition$)).tw.	3458
18	food/ or milk, human/	5097
19	food$.tw.	18854
20	Infant Nutrition/	1511
21	nutritio$.tw.	25614
22	fluid$.tw.	8959
23	GLUCOSE/	1797
24	dextrose.tw.	307
25	Lactose/	101
26	exp Electrolytes/	3369

27 exp Amino Acids/	6582
28 FATS/	382
29 exp Fatty Acids/	7657
30 fatty.tw.	3503
31 exp Infant Food/	1527
32 Infant Feeding/	1583
33 (formula$ or supplement$).tw.	23587
34 Caseins/	34
35 casein hydrolysate.tw.	11
36 rehydrat$.tw.	378
37 CALCIUM, DIETARY/ or CALCIUM/	4494
38 exp Vitamins/	12761
39 Milk/	1083
40 Aspartic Acid/	100
41 aspartic$.tw.	45
42 orotic.tw.	4
43 or/6-42	111537
44 and/5,13,43	446
45 from 44 keep 1-446	446

CINAHL EBSCO

JAUN_fluids2_phototherapy_Q7_cinahl_101208

Tuesday, July 21, 2009 9:01:13 AM

#	Query	Limiters/ Expanders	Last Run Via	Results
S63	S5 and S17 and S62	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S62	S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34 or S35 or S36 or S37 or S38 or S39 or S40 or S41 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S53 or S54 or S55 or S56 or S57 or S58 or S59 or S60 or S61	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S61	TI (orotic*) or AB (orotic*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S60	TI (aspartic*) or AB (aspartic*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S59	MH ASPARTIC ACID	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S58	MH MILK	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S57	MH VITAMINS+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S56	MH CALCIUM	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S55	MH CALCIUM, DIETARY	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S54	TI (rehydrat*) or AB (rehydrat*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S53	TI (casein hydrolysate) or AB	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

	(casein hydrolysate)		Search Screen - Advanced Search Database - CINAHL with Full Text	
S52	MH CASEINS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S51	TI (formula* or supplement*) or AB (formula* or supplement*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S50	MH INFANT FEEDING	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S49	MH INFANT FOOD+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S48	TI (fatty) or AB (fatty)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S47	MH FATTY ACIDS+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S46	MH FATS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S45	MH AMINO ACIDS+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S44	MH ELECTROLYTES+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S43	MH LACTOSE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S42	TI (dextrose) or AB (dextrose)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S41	MH GLUCOSE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S40	TI (fluid*) or AB ((fluid*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S39	TI (nutritio*) or AB (nutritio*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S38	MH INFANT NUTRITION	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S37	TI (food*) or AB (food*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S36	MH MILK, HUMAN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S35	MH FOOD	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S34	TI (intravenous N3 nutirtion*) or AB	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

	(intravenous N3 nutrition*)		Search Screen - Advanced Search Database - CINAHL with Full Text	
S33	TI (intravenous N3 fluid*) or AB (intravenous N3 fluid*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S32	TI (intravenous N3 food*) or AB (intravenous N3 food*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S31	TI (intravenous N3 feed*) or AB (intravenous N3 feed*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S30	TI (parenteral N3 nutrition*) or AB (parenteral N3 nutrition*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S29	TI (parenteral N3 fluid*) or AB (parenteral N3 fluid*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S28	TI (parenteral N3 food*) or AB (parenteral N3 food*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S27	TI (parenteral N3 feed*) or AB (parenteral N3 feed*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S26	TI (enteral N3 nutrition*) or AB (enteral N3 nutrition*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S25	TI (enteral N3 fluid*) or AB (enteral N3 fluid*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S24	TI (enteral N3 food*) or AB (enteral N3 food*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S23	TI (enteral N3 feed*) or AB (enteral N3 feed*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S22	TI (feed*) or AB (feed*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S21	MH PARENTERAL NUTRITION+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S20	(MH "ENTERAL FEEDING (Saba CCC)")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S19	MH BREAST FEEDING+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S18	MH BOTTLE FEEDING	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S17	S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S16	(TI "kernicterus*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S15	MH KERNICTERUS	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S14	(TI jaundice*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S12	(AB "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S11	(TI "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S10	(AB "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S9	(TI "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S8	(TI "bilirubinaemia" OR "bilirubinemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S7	(TI "hyperbilirubinemia" or "hyperbilirubinaemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S6	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

Question: How effective is exchange transfusion? Question 8 (restricted to Srs and RCTs)

Ovid MEDLINE(R) 1950 to November Week 3 2008

JAUN_extransfusion_Q8_medline_011208

#	Searches	Results
1	randomized controlled trial.pt.	269354
2	controlled clinical trial.pt.	80768
3	DOUBLE BLIND METHOD/	101524
4	SINGLE BLIND METHOD/	12756
5	RANDOM ALLOCATION/	63696
6	RANDOMIZED CONTROLLED TRIALS/	58451

7	or/1-6	454611
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	99216
9	clinical trial.pt.	460950
10	exp CLINICAL TRIAL/	572520
11	exp CLINICAL TRIALS AS TOPIC/	215006
12	(clinic$ adj5 trial$).tw,sh.	135409
13	PLACEBOS/	28379
14	placebo$.tw,sh.	128819
15	random$.tw,sh.	572739
16	or/8-15	1004679
17	or/7,16	1009351
18	META ANALYSIS/	20239
19	META ANALYSIS AS TOPIC/	8893
20	meta analysis.pt.	20239
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	35744
22	(systematic$ adj5 (review$ or overview$)).tw,sh.	19180
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	1992
24	or/18-23	50031
25	review$.pt.	1443690
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw.	32625
27	((hand or manual$) adj2 search$).tw.	3596
28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	5571

29 (pooling or pooled or mantel haenszel).tw,sh.	30488
30 (peto or dersimonian or der simonian or fixed effect).tw,sh.	1438
31 or/26-30	65157
32 and/25,31	27889
33 or/24,32	66224
34 letter.pt.	654631
35 case report.tw.	140535
36 comment.pt.	376053
37 editorial.pt.	234808
38 historical article.pt.	258810
39 or/34-38	1331074
40 17 not 39	971945
41 33 not 39	62537
42 or/40-41	1003830
43 INFANT, PREMATURE/	33294
44 preterm$.tw.	29795
45 INFANT, NEWBORN/	428760
46 (newborn$ or neonate$).tw.	140513
47 or/43-46	487320
48 HYPERBILIRUBINEMIA/	3449
49 HYPERBILIRUBINEMIA, NEONATAL/	185
50 hyperbilirubin?emia$.ti.	2214
51 bilirubin?emia$.ti.	149
52 ((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	290

53	exp JAUNDICE/	10170
54	jaundice$.ti.	9930
55	KERNICTERUS/	904
56	kernicterus.tw.	676
57	or/48-56	20922
58	EXCHANGE TRANSFUSION, WHOLE BLOOD/	4060
59	(exchange adj3 transfusion$).tw.	3519
60	or/58-59	5649
61	and/42,47,57,60	63

EBM Reviews - Cochrane Central Register of Controlled Trials 4th Quarter 2008

JAUN_extransfusion_Q8_cctr_011208

#	Searches	Results
1	randomized controlled trial.pt.	249900
2	controlled clinical trial.pt.	75697
3	DOUBLE BLIND METHOD/	82027
4	SINGLE BLIND METHOD/	7788
5	RANDOM ALLOCATION/	20222
6	RANDOMIZED CONTROLLED TRIALS/	0
7	or/1-6	320983
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	107843

9	clinical trial.pt.	273573
10	exp CLINICAL TRIAL/	0
11	exp CLINICAL TRIALS AS TOPIC/	0
12	(clinic$ adj5 trial$).tw,sh.	35968
13	PLACEBOS/	18338
14	placebo$.tw,sh.	106765
15	random$.tw,sh.	246271
16	or/8-15	391449
17	or/7,16	403240
18	META ANALYSIS/	0
19	META ANALYSIS AS TOPIC/	172
20	meta analysis.pt.	478
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	1068
22	(systematic$ adj5 (review$ or overview$)).tw,sh.	265
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	26
24	or/18-23	1478
25	review$.pt.	2652
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw.	412
27	((hand or manual$) adj2 search$).tw.	40
28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	62
29	(pooling or pooled or mantel haenszel).tw,sh.	2075
30	(peto or dersimonian or der simonian or fixed effect).tw,sh.	31

31	or/26-30	2530
32	and/25,31	92
33	or/24,32	1540
34	letter.pt.	4515
35	case report.tw.	151
36	comment.pt.	1577
37	editorial.pt.	280
38	historical article.pt.	58
39	or/34-38	5302
40	17 not 39	398088
41	33 not 39	1506
42	or/40-41	398345
43	INFANT, PREMATURE/	1731
44	preterm$.tw.	3132
45	INFANT, NEWBORN/	8524
46	(newborn$ or neonate$).tw.	4271
47	or/43-46	11554
48	HYPERBILIRUBINEMIA/	58
49	HYPERBILIRUBINEMIA, NEONATAL/	10
50	hyperbilirubin?emia$.ti.	149
51	bilirubin?emia$.ti.	4
52	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
53	exp JAUNDICE/	51
54	jaundice$.ti.	196

55	KERNICTERUS/	2
56	kernicterus.tw.	7
57	or/48-56	443
58	EXCHANGE TRANSFUSION, WHOLE BLOOD/	50
59	(exchange adj3 transfusion$).tw.	103
60	or/58-59	123
61	and/42,47,57,60	42

DARE, CDSR

JAUN_extransfusion_Q8_cdsrdare_011208

#	Searches	Results
1	randomized controlled trial.pt.	0
2	controlled clinical trial.pt.	0
3	DOUBLE BLIND METHOD.kw.	233
4	SINGLE BLIND METHOD.kw.	18
5	RANDOM ALLOCATION.kw.	11
6	RANDOMIZED CONTROLLED TRIALS.kw.	6081
7	or/1-6	6124
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	3988
9	clinical trial.pt.	0
10	CLINICAL TRIAL.kw.	0
11	CLINICAL TRIALS AS TOPIC.kw.	826

12	(clinic$ adj5 trial$).tw,sh.	6201
13	PLACEBOS.kw.	112
14	placebo$.tw,sh.	5571
15	random$.tw,sh.	11901
16	or/8-15	12318
17	or/7,16	12318
18	META ANALYSIS.kw.	163
19	META ANALYSIS AS TOPIC.kw.	93
20	meta analysis.pt.	0
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	8308
22	(systematic$ adj5 (review$ or overview$)).tw,sh.	8226
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	2923
24	or/18-23	12169
25	review$.pt.	0
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw,tx.	11759
27	((hand or manual$) adj2 search$).tw,tx.	1940
28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	2655
29	(pooling or pooled or mantel haenszel).tw,sh.	6059
30	(peto or dersimonian or der simonian or fixed effect).tw,sh.	4041
31	or/26-30	11940
32	and/25,31	0
33	or/24,32	12169

34	letter.pt.	0
35	case report.tw,tx.	122
36	comment.pt.	0
37	editorial.pt.	0
38	historical article.pt.	0
39	or/34-38	122
40	17 not 39	12210
41	33 not 39	12066
42	or/40-41	13589
43	INFANT, PREMATURE.kw.	212
44	preterm$.tw,tx.	574
45	INFANT, NEWBORN.kw.	613
46	(newborn$ or neonate$).tw,tx.	996
47	or/43-46	1149
48	HYPERBILIRUBINEMIA.kw.	3
49	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
50	hyperbilirubin?emia$.ti.	2
51	bilirubin?emia$.ti.	0
52	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw,tx.	5
53	JAUNDICE.kw.	14
54	jaundice$.ti.	10
55	KERNICTERUS.kw.	1
56	kernicterus.tw,tx.	14
57	or/48-56	23

58	EXCHANGE TRANSFUSION, WHOLE BLOOD.kw.	6
59	(exchange adj3 transfusion$).tw,tx.	33
60	or/58-59	33
61	and/42,47,57,60	12

EMBASE 1980 to 2008 Week 48

JAUN_extransfusion_Q8_embase_011208

#	Searches	Results
1	CLINICAL TRIALS/	522052
2	(clinic$ adj5 trial$).ti,ab,sh.	123547
3	SINGLE BLIND PROCEDURE/	7823
4	DOUBLE BLIND PROCEDURE/	70602
5	RANDOM ALLOCATION/	26321
6	CROSSOVER PROCEDURE/	20738
7	PLACEBO/	120388
8	placebo$.ti,ab,sh.	171107
9	random$.ti,ab,sh.	423840
10	RANDOMIZED CONTROLLED TRIALS/	163207
11	((single or double or triple or treble) adj (blind$ or mask$)).ti,ab,sh.	91916

12	randomi?ed control$ trial$.tw.	32220
13	or/1-12	856359
14	META ANALYSIS/	34265
15	((meta adj analy$) or metaanalys$ or meta-analy$).ti,ab,sh.	43974
16	(systematic$ adj5 (review$ or overview$)).ti,sh,ab.	26646
17	(methodologic$ adj5 (review$ or overview$)).ti,ab,sh.	1626
18	or/14-17	60821
19	review.pt.	907394
20	(medline or medlars or embase).ab.	23179
21	(scisearch or science citation index).ab.	718
22	(psychlit or psyclit or psychinfo or psycinfo or cinahl or cochrane).ab.	8449
23	((hand or manual$) adj2 search$).tw.	2659
24	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw.	4272
25	(pooling or pooled or mantel haenszel).tw.	24530
26	(peto or dersimonian or "der simonian" or fixed effect).tw.	878
27	or/20-26	52106
28	and/19,27	18505
29	or/18,28	71132
30	(book or conference paper or editorial or letter or note or proceeding or short survey).pt.	1717302
31	13 not 30	732458
32	29 not 31	33276
33	or/31-32	765734

34 PREMATURITY/	29136
35 preterm$.tw.	26475
36 NEWBORN/	177971
37 (newborn$ or neonate$).tw.	96976
38 or/34-37	238514
39 HYPERBILIRUBINEMIA/	5686
40 HYPERBILIRUBINEMIA, NEONATAL/	1735
41 hyperbilirubin?emia$.ti.	1055
42 bilirubin?emia$.ti.	15
43 ((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	247
44 JAUNDICE/	9776
45 NEWBORN JAUNDICE/	1735
46 jaundice$.ti.	3639
47 KERNICTERUS/	709
48 kernicterus$.ti.	149
49 or/39-48	18078
50 EXCHANGE BLOOD TRANSFUSION/	1714
51 (exchange adj3 transfusion$).tw.	1856
52 or/50-51	2540
53 and/33,38,49,52	50

CINAHL EBSCO

JAUN_extrafusion_Q8_cinahl_011208

#	Query	Limiters/ Expanders	Last Run Via	Results
S21	S5 and S17 and S20	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S20	S18 or S19	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S19	TI (exchange N3 transfusion*) or AB (exchange N3 transfusion*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S18	MH EXCHANGE TRANSFUSION, WHOLE BLOOD	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S17	S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S16	(TI "kernicterus*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S15	MH KERNICTERUS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S14	(TI jaundice*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S12	(AB "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S11	(TI "hyperbilirubin*" N3	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

	"encephalopath*")		Search Screen - Advanced Search Database - CINAHL with Full Text	
S10	(AB "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S9	(TI "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S8	(TI "bilirubinaemia" OR "bilirubinemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S7	(TI "hyperbilirubinemia" or "hyperbilirubinaemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S6	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full	Display

			Text	
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

QUESTION: What are the other ways of treating hyperbilirubinaemia? Question 9 (restricted to Srs and RCTs)

Ovid MEDLINE(R) 1950 to November Week 3 2008

JAUN_other_treatments_hyperbil_medline_041208

#	Searches	Results
1	randomized controlled trial.pt.	269477
2	controlled clinical trial.pt.	80776
3	DOUBLE BLIND METHOD/	101566
4	SINGLE BLIND METHOD/	12762
5	RANDOM ALLOCATION/	63710
6	RANDOMIZED CONTROLLED TRIALS/	58509
7	or/1-6	454816
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	99256
9	clinical trial.pt.	460981
10	exp CLINICAL TRIAL/	572702
11	exp CLINICAL TRIALS AS TOPIC/	215116
12	(clinic$ adj5 trial$).tw,sh.	135508

13	PLACEBOS/	28390
14	placebo$.tw,sh.	128873
15	random$.tw,sh.	573052
16	or/8-15	1005126
17	or/7,16	1009800
18	META ANALYSIS/	20263
19	META ANALYSIS AS TOPIC/	8898
20	meta analysis.pt.	20263
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	35783
22	(systematic$ adj5 (review$ or overview$)).tw,sh.	19221
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	1997
24	or/18-23	50110
25	review$.pt.	1444767
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw.	32669
27	((hand or manual$) adj2 search$).tw.	3600
28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	5576
29	(pooling or pooled or mantel haenszel).tw,sh.	30507
30	(peto or dersimonian or der simonian or fixed effect).tw,sh.	1441
31	or/26-30	65217
32	and/25,31	27917
33	or/24,32	66312
34	letter.pt.	654713

35	case report.tw.	140604
36	comment.pt.	376142
37	editorial.pt.	234908
38	historical article.pt.	258893
39	or/34-38	1331435
40	17 not 39	972374
41	33 not 39	62622
42	or/40-41	1004300
43	INFANT, PREMATURE/	33330
44	preterm$.tw.	29802
45	INFANT, NEWBORN/	428896
46	(newborn$ or neonate$).tw.	140553
47	or/43-46	487500
48	HYPERBILIRUBINEMIA/	3451
49	HYPERBILIRUBINEMIA, NEONATAL/	185
50	hyperbilirubin?emia$.ti.	2214
51	bilirubin?emia$.ti.	149
52	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	290
53	exp JAUNDICE/	10190
54	jaundice$.ti.	9946
55	KERNICTERUS/	905
56	kernicterus.tw.	677
57	or/48-56	20953
58	exp METALLOPORPHYRINS/	27073

59	exp PORPHYRINS/	41919
60	(metalloporphyrin$ or protoporphyrin$ or mesoprophytin$).tw.	6025
61	PORPHOBILINOGEN/	610
62	exp "HEME OXYGENASE (DECYCLIZING)"/	4467
63	SnMP.tw.	87
64	exp GAMMA-GLOBULINS/	19547
65	gammaglobulin$.tw.	1893
66	"gamma globulin$".tw.	8903
67	exp IMMUNOGLOBULINS/	637134
68	immun?globulin$.tw.	101621
69	"immuno globulin$".tw.	109
70	"immune globulin$".tw.	2583
71	phenobarb$.tw.	16064
72	PHENYTOIN/	12136
73	Phenytoin.tw.	8677
74	CLOFIBRATE/	3708
75	CHOLESTYRAMINE/	2484
76	(cholestyramine$ or colestyramine$).tw.	2086
77	AGAR/	7242
78	exp CHARCOAL/	5272
79	SUPPOSITORIES/	3475
80	exp COMPLEMENTARY THERAPIES/	133872
81	MEDICINE, HERBAL/	808
82	((alternative or complementary or traditional or herbal or integrative) adj3 (therap$ or medicine$)).tw.	28175

83	DRUGS, CHINESE HERBAL/	16180
84	"yin chin".tw.	3
85	manna.tw.	33
86	infusion$.tw.	171350
87	exp PENICILLAMINE/	7359
88	"d-penicillamin$".tw.	2965
89	DIAZEPAM/	16365
90	or/58-89	1104119
91	and/42,47,57,90	74

EBM Reviews - Cochrane Central Register of Controlled Trials 4th Quarter 2008

JAUN_other_treatments_hyperbil_cctr_041208

#	Searches	Results
1	randomized controlled trial.pt.	249900
2	controlled clinical trial.pt.	75697
3	DOUBLE BLIND METHOD/	82027
4	SINGLE BLIND METHOD/	7788
5	RANDOM ALLOCATION/	20222
6	RANDOMIZED CONTROLLED TRIALS/	0
7	or/1-6	320983
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	107843

9	clinical trial.pt.	273573
10	exp CLINICAL TRIAL/	0
11	exp CLINICAL TRIALS AS TOPIC/	0
12	(clinic$ adj5 trial$).tw,sh.	35968
13	PLACEBOS/	18338
14	placebo$.tw,sh.	106765
15	random$.tw,sh.	246271
16	or/8-15	391449
17	or/7,16	403240
18	META ANALYSIS/	0
19	META ANALYSIS AS TOPIC/	172
20	meta analysis.pt.	478
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	1068
22	(systematic$ adj5 (review$ or overview$)).tw,sh.	265
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	26
24	or/18-23	1478
25	review$.pt.	2652
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw.	412
27	((hand or manual$) adj2 search$).tw.	40
28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	62
29	(pooling or pooled or mantel haenszel).tw,sh.	2075
30	(peto or dersimonian or der simonian or fixed effect).tw,sh.	31

31	or/26-30	2530
32	and/25,31	92
33	or/24,32	1540
34	letter.pt.	4515
35	case report.tw.	151
36	comment.pt.	1577
37	editorial.pt.	280
38	historical article.pt.	58
39	or/34-38	5302
40	17 not 39	398088
41	33 not 39	1506
42	or/40-41	398345
43	INFANT, PREMATURE/	1731
44	preterm$.tw.	3132
45	INFANT, NEWBORN/	8524
46	(newborn$ or neonate$).tw.	4271
47	or/43-46	11554
48	HYPERBILIRUBINEMIA/	58
49	HYPERBILIRUBINEMIA, NEONATAL/	10
50	hyperbilirubin?emia$.ti.	149
51	bilirubin?emia$.ti.	4
52	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	9
53	exp JAUNDICE/	51
54	jaundice$.ti.	196

55 KERNICTERUS/	2
56 kernicterus.tw.	7
57 or/48-56	443
58 exp METALLOPORPHYRINS/	58
59 exp PORPHYRINS/	204
60 (metalloporphyrin$ or protoporphyrin$ or mesoprophytin$).tw.	101
61 PORPHOBILINOGEN/	3
62 exp "HEME OXYGENASE (DECYCLIZING)"/	14
63 SnMP.tw.	4
64 exp GAMMA-GLOBULINS/	151
65 gammaglobulin$.tw.	103
66 "gamma globulin$".tw.	169
67 exp IMMUNOGLOBULINS/	9088
68 immun?globulin$.tw.	2199
69 "immuno globulin$".tw.	5
70 "immune globulin$".tw.	280
71 phenobarb$.tw.	505
72 PHENYTOIN/	451
73 Phenytoin.tw.	624
74 CLOFIBRATE/	186
75 CHOLESTYRAMINE/	234
76 (cholestyramine$ or colestyramine$).tw.	330
77 AGAR/	11
78 exp CHARCOAL/	189

79	SUPPOSITORIES/	470
80	exp COMPLEMENTARY THERAPIES/	7447
81	MEDICINE, HERBAL/	16
82	((alternative or complementary or traditional or herbal or integrative) adj3 (therap$ or medicine$)).tw.	2538
83	DRUGS, CHINESE HERBAL/	1353
84	"yin chin".tw.	0
85	manna.tw.	3
86	infusion$.tw.	21954
87	exp PENICILLAMINE/	159
88	"d-penicillamin$".tw.	172
89	DIAZEPAM/	1755
90	or/58-89	45480
91	and/42,47,57,90	58

DARE, CDSR

JAUN_other_treatments_hyperbil_cdsrdare_041208

#	Searches	Results
1	randomized controlled trial.pt.	0
2	controlled clinical trial.pt.	0
3	DOUBLE BLIND METHOD.kw.	233
4	SINGLE BLIND METHOD.kw.	18

5	RANDOM ALLOCATION.kw.	11
6	RANDOMIZED CONTROLLED TRIALS.kw.	6081
7	or/1-6	6124
8	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	3988
9	clinical trial.pt.	0
10	CLINICAL TRIAL.kw.	0
11	CLINICAL TRIALS AS TOPIC.kw.	826
12	(clinic$ adj5 trial$).tw,sh.	6201
13	PLACEBOS.kw.	112
14	placebo$.tw,sh.	5571
15	random$.tw,sh.	11901
16	or/8-15	12318
17	or/7,16	12318
18	META ANALYSIS.kw.	163
19	META ANALYSIS AS TOPIC.kw.	93
20	meta analysis.pt.	0
21	(metaanaly$ or meta-analy$ or (meta adj analy$)).tw,sh.	8308
22	(systematic$ adj5 (review$ or overview$)).tw,sh.	8226
23	(methodologic$ adj5 (review$ or overview$)).tw,sh.	2923
24	or/18-23	12169
25	review$.pt.	0
26	(medline or medlars or embase or cinahl or cochrane or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation" or scisearch).tw.	11759
27	((hand or manual$) adj2 search$).tw.	1940

28	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw,sh.	2655
29	(pooling or pooled or mantel haenszel).tw,sh.	6059
30	(peto or dersimonian or der simonian or fixed effect).tw,sh.	4041
31	or/26-30	11940
32	and/25,31	0
33	or/24,32	12169
34	letter.pt.	0
35	case report.tw.	122
36	comment.pt.	0
37	editorial.pt.	0
38	historical article.pt.	0
39	or/34-38	122
40	17 not 39	12210
41	33 not 39	12066
42	or/40-41	13589
43	INFANT, PREMATURE.kw.	212
44	preterm$.tw,tx.	574
45	INFANT, NEWBORN.kw.	613
46	(newborn$ or neonate$).tw,tx.	996
47	or/43-46	1149
48	HYPERBILIRUBINEMIA.kw.	3
49	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
50	hyperbilirubin?emia$.ti.	2
51	bilirubin?emia$.ti.	0

52	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw,tx.	5
53	JAUNDICE.kw.	14
54	jaundice$.ti.	10
55	KERNICTERUS.kw.	1
56	kernicterus.tw,tx.	14
57	or/48-56	23
58	METALLOPORPHYRINS.kw.	1
59	PORPHYRINS.kw.	3
60	(metalloporphyrin$ or protoporphyrin$ or mesoprophytin$).tw,tx.	7
61	PORPHOBILINOGEN.kw.	0
62	"HEME OXYGENASE (DECYCLIZING)".kw.	0
63	SnMP.tw,tx.	0
64	GAMMA-GLOBULINS.kw.	1
65	gammaglobulin$.tw,tx.	7
66	"gamma globulin$".tw,tx.	14
67	IMMUNOGLOBULINS.kw.	50
68	immun?globulin$.tw,tx.	251
69	"immuno globulin$".tw,tx.	0
70	"immune globulin$".tw,tx.	27
71	phenobarb$.tw,tx.	81
72	PHENYTOIN.kw.	14
73	Phenytoin.tw,tx.	101
74	CLOFIBRATE.kw.	4
75	CHOLESTYRAMINE.kw.	3

76	(cholestyramine$ or colestyramine$).tw,tx.	32
77	AGAR.kw.	0
78	CHARCOAL.kw.	4
79	SUPPOSITORIES.kw.	3
80	COMPLEMENTARY THERAPIES.kw.	84
81	MEDICINE, HERBAL.kw.	4
82	((alternative or complementary or traditional or herbal or integrative) adj3 (therap$ or medicine$)).tw,tx.	964
83	DRUGS, CHINESE HERBAL.kw.	60
84	"yin chin".tw.	0
85	manna.tw,tx.	0
86	infusion$.tw,tx.	729
87	PENICILLAMINE.kw.	6
88	"d-penicillamin$".tw,tx.	23
89	DIAZEPAM.kw.	14
90	or/58-89	2000
91	and/42,47,57,90	9

EMBASE 1980 to 2008 Week 49

JAUN_other_treatments_hyperbil_embase_041208

#	Searches	Results
1	CLINICAL TRIALS/	523012

2	(clinic$ adj5 trial$).ti,ab,sh.	123857
3	SINGLE BLIND PROCEDURE/	7842
4	DOUBLE BLIND PROCEDURE/	70681
5	RANDOM ALLOCATION/	26340
6	CROSSOVER PROCEDURE/	20766
7	PLACEBO/	120719
8	placebo$.ti,ab,sh.	171464
9	random$.ti,ab,sh.	424569
10	RANDOMIZED CONTROLLED TRIALS/	163469
11	((single or double or triple or treble) adj (blind$ or mask$)).ti,ab,sh.	92005
12	randomi?ed control$ trial$.tw.	32313
13	or/1-12	857875
14	META ANALYSIS/	34310
15	((meta adj analy$) or metaanalys$ or meta-analy$).ti,ab,sh.	44066
16	(systematic$ adj5 (review$ or overview$)).ti,sh,ab.	26755
17	(methodologic$ adj5 (review$ or overview$)).ti,ab,sh.	1631
18	or/14-17	60986
19	review.pt.	908965
20	(medline or medlars or embase).ab.	23253
21	(scisearch or science citation index).ab.	719
22	(psychlit or psyclit or psychinfo or psycinfo or cinahl or cochrane).ab.	8491
23	((hand or manual$) adj2 search$).tw.	2670
24	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw.	4286

25	(pooling or pooled or mantel haenszel).tw.	24587
26	(peto or dersimonian or "der simonian" or fixed effect).tw.	880
27	or/20-26	52240
28	and/19,27	18549
29	or/18,28	71320
30	(book or conference paper or editorial or letter or note or proceeding or short survey).pt.	1719512
31	13 not 30	733767
32	29 not 31	33373
33	or/31-32	767140
34	PREMATURITY/	29195
35	preterm$.tw.	26540
36	NEWBORN/	178121
37	(newborn$ or neonate$).tw.	97095
38	or/34-37	238783
39	HYPERBILIRUBINEMIA/	5702
40	HYPERBILIRUBINEMIA, NEONATAL/	1737
41	hyperbilirubin?emia$.ti.	1057
42	bilirubin?emia$.ti.	16
43	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	248
44	JAUNDICE/	9796
45	NEWBORN JAUNDICE/	1737
46	jaundice$.ti.	3642
47	KERNICTERUS/	710
48	kernicterus$.ti.	150

49	or/39-48	18115
50	exp PORPHYRIN/ or UROPORPHYRIN/ or exp PORPHYRIN DERIVATIVE/	173835
51	(metalloporphyrin$ or protoporphyrin$ or mesoprophytin$).tw.	4773
52	porphobilinogen$.tw.	821
53	HEME OXYGENASE.mp. or HEME OXYGENASE 1/ or HEME OXYGENASE 2/ [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]	5287
54	SnMp.tw.	71
55	exp IMMUNOGLOBULIN/	168343
56	gammaglobulin$.tw.	1482
57	"gamma globulin$".tw.	3801
58	immun?globulin$.tw.	77114
59	"immuno globulin$".tw.	66
60	"immune globulin$".tw.	2079
61	PHENOBARBITAL/	31185
62	phenobarb$.tw.	13026
63	PHENYTOIN/	35076
64	phenytoin.tw.	8259
65	CLOFIBRATE/	5091
66	COLESTYRAMINE/	6654
67	(cholestyramine$ or colestyramine$).tw.	1677
68	AGAR/	4871
69	CHARCOAL/	2304
70	SUPPOSITORY/	2067

71	exp ALTERNATIVE MEDICINE/ or exp TRADITIONAL MEDICINE/	32968
72	((alternative or complementary or traditional or herbal or integrative) adj3 (therap$ or medicine$)).tw.	26693
73	"yin chin".tw.	2
74	MANNAN/	1619
75	infusion$.tw.	147396
76	PENICILLAMINE/	11215
77	"d-penicillamin$".tw.	2317
78	DIAZEPAM/	42601
79	or/50-78	672505
80	and/33,38,49,79	99

CINAHL - Cumulative Index to Nursing & Allied Health Literature 1982 to November Week 4 2008

JAUN_other_treatments_hyperbil_cinahl_041208

#	Searches	Results
1	exp CLINICAL TRIALS/	67451
2	clinical trial.pt.	35791
3	(clinic$ adj5 trial$).tw,sh.	16660
4	SINGLE-BLIND STUDIES/	3223
5	DOUBLE-BLIND STUDIES/	12243
6	TRIPLE-BLIND STUDIES/	44
7	((single or double or triple or treble) adj5 (blind$ or mask$)).tw,sh.	9133

8	RANDOM ASSIGNMENT/	19804
9	random$.tw.	59499
10	RANDOMIZED CONTROLLED TRIALS/	52404
11	randomi?ed control$ trial$.tw.	13122
12	PLACEBOS/	4809
13	placebo$.tw.	12467
14	or/1-13	109025
15	META ANALYSIS/	7198
16	((meta adj analy$) or metaanalys$ or meta-analy$).tw.	5719
17	SYSTEMATIC REVIEW/	4138
18	systematic review.pt.	13058
19	(systematic$ adj5 (review$ or overview$)).tw.	10291
20	LITERATURE REVIEW/	2619
21	or/15-20	24384
22	("review" or "review studies" or "review academic" or "review tutorial").ti,ab,sh,pt.	121038
23	(medline or medlars or embase or cochrane or scisearch or psycinfo or psychinfo or psychlit or psyclit or "web of science" or "science citation").tw.	10568
24	((hand or manual$) adj2 search$).tw.	1147
25	(electronic database$ or bibliographic database$ or computeri?ed database$ or online database$).tw.	2024
26	(pooling or pooled or mantel haenszel).tw.	2984
27	(peto or dersimonian or "der simonian" or fixed effect).tw.	453
28	or/23-27	13988
29	and/22,28	8201

30 or/14,21,29	124217
31 letter.pt.	67553
32 commentary.pt.	89181
33 editorial.pt.	94706
34 or/31-33	202879
35 30 not 34	110523
36 INFANT, PREMATURE/	6317
37 preterm$.tw.	5421
38 INFANT, NEWBORN/	39579
39 (newborn$ or neonate$).tw.	10039
40 or/36-39	44557
41 HYPERBILIRUBINEMIA/	219
42 hyperbilirubin?emia$.ti.	143
43 ((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	27
44 JAUNDICE/	224
45 jaundice$.ti.	304
46 KERNICTERUS/	102
47 kernicterus$.ti.	41
48 or/41-47	735
49 porphyrins/ or metalloporphyrins/	92
50 (metalloporphyrin$ or protoporphyrin$ or mesoprophytin$).tw.	84
51 porphobilinogen.tw.	6
52 heme oxygenase.tw.	92
53 SnMP.tw.	6

54	gamma globulins/ or exp immunoglobulins/	3774
55	gammaglobulin$.tw.	24
56	"gamma globulin$".tw.	51
57	immun?globulin$.tw.	1736
58	"immuno globulin$".tw.	1
59	"immune globulin$".tw.	215
60	Phenobarbital/	162
61	phenobarb$.tw.	157
62	Phenytoin/	388
63	phenytoin.tw.	327
64	clofibrate.tw.	13
65	Cholestyramine/	57
66	(cholestyramine$ or colestyramine$).tw.	34
67	agar.tw.	341
68	Charcoal/	296
69	Suppositories/	135
70	exp Alternative Therapies/	60038
71	exp medicine, herbal/ or exp medicine, traditional/	12079
72	Drugs, Chinese Herbal/	552
73	((alternative or complementary or traditional or herbal or integrative) adj3 (therap$ or medicine$)).tw.	8267
74	"yin chin".tw.	0
75	manna$.tw.	38
76	infusion.tw.	5939
77	Penicillamine/	55

78	"d-penicillamin$".tw.	28
79	Diazepam/	279
80	or/49-79	74802
81	and/35,40,48,80	15

CINAHL EBSCO

JAUN_other_treatments_hyperbil_cinahl_041208

Friday, May 01, 2009 5:22:11 AM

#	Query	Limiters/ Expanders	Last Run Via	Results
S61	S5 and S17 and S60	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	129
S60	S36 or S59	Search modes -	Interface - EBSCOhost	80303

		Boolean/Phrase	Search Screen - Advanced Search Database - CINAHL with Full Text	
S59	S37 or S38 or S39 or S40 or S41 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S53 or S54 or S55 or S56 or S57 or S58	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	74666
S58	immune globulin*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	351
S57	MH DIAZEPAM	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	301
S56	TI (d penicillamin*) or AB (d penicillamin*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	32
S55	MH PENICILLAMINE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	59

			Database - CINAHL with Full Text	
S54	TI (infusion) or AB (infusion)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	6714
S53	TI (manna*) or AB (manna*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	39
S52	TI (yin chin) or AB (yin chin)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	0
S51	TI (integrative N3 medicine*) or AB (integrative N3 medicine*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	294
S50	TI (integrative N3 therap*) or AB (integrative N3 therap*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	126

S49	TI (herbal N3 medicine*) or AB (herbal N3 medicine*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	969
S48	TI (herbal N3 therap*) or AB (herbal N3 therap*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	282
S47	TI (traditional N3 medicine*) or AB (traditional N3 medicine*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1288
S46	TI (traditional N3 therap*) or AB (traditional N3 therap*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	608
S45	TI (alternative N3 medicine*) or AB (alternative N3 medicine*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	2708
S44	TI (alternative N3 therap*) or AB (alternative N3 therap*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	2182

			Database - CINAHL with Full Text	
S43	MH DRUGS, CHINESE HERBAL	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	647
S42	MH MEDICINE, TRADITIONAL+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	12848
S41	MH MEDICINE, HERBAL+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	4246
S40	MH ALTERNATIVE THERAPIES+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	63683
S39	MH SUPPOSITORIES	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	149

S38	MH CHARCOAL	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	306
S37	TI (agar*) or AB (agar*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	510
S36	S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34 or S35	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	6179
S35	AB (cholestyramine* or colestyramine*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	33
S34	TI (cholestyramine* or colestyramine*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	11
S33	MH CHOLESTYRAMINE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	60

			Database - CINAHL with Full Text	
S32	TI (clofibrate) or AB (clofibrate)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	14
S31	TI (phenytoin) or AB (phenytoin)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	363
S30	MH PHENYTOIN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	410
S29	TI (phenobarb*) or AB (phenobarb*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	181
S28	MH PHENOBARBITAL	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	178

S27	TI (immunglobulin* or immunoglobulin*) or AB (immunglobulin* or immunoglobulin*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1952
S26	TI (gamma globulin* or gamma globulin*) or AB (gamma globulin* or gamma globulin*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	60
S25	TI (heme oxygenase) or AB (heme oxygenase)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	115
S24	MH IMMUNOGLOBULINS +	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	4068
S23	MH GAMMA GLOBULINS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	58
S22	TI (SnMP) or AB (SnMP)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	6

			Database - CINAHL with Full Text	
S21	TI (porphobilinogen*) or AB (porphobilinogen*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	7
S20	TI (metalloporphyrin* or protoporphyrin* or mesoprophytin*) or AB (metalloporphyrin* or protoporphyrin* or mesoprophytin*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	90
S19	MH METALLOPORPHYRINS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	34
S18	MH PORPHYRINS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	79
S17	S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	826

S16	(TI "kernicterus*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	49
S15	MH KERNICTERUS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	110
S14	(TI jaundice*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	329
S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	248
S12	(AB "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	3
S11	(TI "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	0

			Database - CINAHL with Full Text	
S10	(AB "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	25
S9	(TI "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	8
S8	(TI "bilirubinaemia" OR "bilirubinemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	6
S7	(TI "hyperbilirubinemia" or "hyperbilirubinaemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	196
S6	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	236

S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	47455
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	10880
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	41764
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	5956
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	6737

AMED (Allied and Complementary Medicine) 1985 to March 2009

JAUN_other_treatments_hyperbil_amed_260309

#	Searches	Results
1	exp INFANT NEWBORN/	334
2	(prematur$ adj3 (infant$ or baby or babies)).tw.	150
3	preterm$.tw.	143
4	(newborn$ or neonate$).tw.	493
5	or/1-4	685
6	hyperbilirubin?emi$.tw.	12
7	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	0
8	JAUNDICE/	32
9	jaundice$.tw.	131
10	kernicterus.tw.	3
11	or/6-10	143
12	(metalloporphyrin$ or protoporphyrin$ or mesoprophytin$).tw.	7
13	porphobilinogen.tw.	0
14	heme oxygenase.tw.	11
15	SnMP.tw.	0
16	gamma globulin$.tw.	7
17	exp IMMUNOGLOBULINS/	64
18	immun?globulin$.tw.	125
19	"immuno globulin$".tw.	0
20	"immune globulin$".tw.	1

21	phenobarb$.tw.	42
22	phenytoin.tw.	44
23	clofibrate.tw.	1
24	cholestyramine.tw.	0
25	colestyramine$.tw.	0
26	agar.tw.	166
27	charcoal.tw.	44
28	SUPPOSITORIES/	2
29	exp COMPLEMENTARY THERAPIES/	39578
30	exp HERBAL DRUGS/ or exp DRUGS CHINESE HERBAL/ or exp HERBALISM/	8656
31	((alternative or complementary or traditional or herbal or integrative) adj3 (therap$ or medicine$)).tw.	13567
32	yin chin.tw.	0
33	manna.tw.	0
34	infusion$.tw.	422
35	penicillamine.tw.	3
36	d penicillamine.tw.	1
37	diazepam.tw.	78
38	or/12-37	48662
39	and/5,11,38	5

QUESTION: (i)What are the appropriate criteria for monitoring babies with jaundice who are at lower risk of developing neonatal hyperbilirubinaemia/kernicterus.

(ii) What are the appropriate criteria for monitoring babies diagnosed with neonatal hyperbilirubinaemia who do not require immediate treatment?

Ovid MEDLINE(R) 1950 to March Week 2 2009

JAUN_Q10_monitor_medline_200309

#	Searches	Results
1	INFANT, PREMATURE/	32368
2	preterm$.tw.	29467
3	INFANT, NEWBORN/	415422
4	(newborn$ or neonate$).tw.	137510
5	or/1-4	473411
6	HYPERBILIRUBINEMIA/	3391
7	HYPERBILIRUBINEMIA, NEONATAL/	179
8	hyperbilirubin?emia$.ti.	2160
9	bilirubin?emia$.ti.	148
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	288
11	exp JAUNDICE/	9895
12	jaundice$.ti.	9604
13	or/6-12	19658
14	(total adj3 serum adj3 bilirubin$).tw.	1304
15	(serum adj3 bilirubin$ adj3 level$).tw.	1864
16	tsb.tw.	527

17	BILIRUBIN/bl [Blood]	11255
18	(unconjugated adj3 bilirubin).tw.	857
19	RISK ASSESSMENT/	99199
20	(risk$ adj3 (assess$ or index or model$)).tw.	40976
21	RISK FACTORS/	371020
22	risk factor$.tw.	203523
23	or/19-22	552451
24	exp MONITORING, PHYSIOLOGIC/	93688
25	(monitor$ or assess$ or check$ or measure$).tw.	2510349
26	or/14-18,24-25	2555927
27	26 and 23 and 13	279

EBM Reviews - Cochrane Central Register of Controlled Trials 1st Quarter 2009

JAUN_Q10_monitor_cctr_200309

#	Searches	Results
1	INFANT, PREMATURE/	1763
2	preterm$.tw.	3175
3	INFANT, NEWBORN/	8634
4	(newborn$ or neonate$).tw.	4338
5	or/1-4	11718

6	HYPERBILIRUBINEMIA/	58
7	HYPERBILIRUBINEMIA, NEONATAL/	11
8	hyperbilirubin?emia$.ti.	149
9	bilirubin?emia$.ti.	4
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	10
11	exp JAUNDICE/	54
12	jaundice$.ti.	199
13	or/6-12	445
14	(total adj3 serum adj3 bilirubin$).tw.	119
15	(serum adj3 bilirubin$ adj3 level$).tw.	190
16	tsb.tw.	26
17	BILIRUBIN/bl [Blood]	491
18	(unconjugated adj3 bilirubin).tw.	22
19	RISK ASSESSMENT/	3167
20	(risk$ adj3 (assess$ or index or model$)).tw.	1714
21	RISK FACTORS/	10860
22	risk factor$.tw.	8588
23	or/19-22	18928
24	exp MONITORING, PHYSIOLOGIC/	5952
25	(monitor$ or assess$ or check$ or measure$).tw.	186478
26	or/14-18,24-25	188292
27	and/5,13,23,26	5

DARE, CDSR

JAUN_Q10_monitor_cdsrdare_200309

#	Searches	Results
1	INFANT, PREMATURE.kw.	216
2	preterm$.tw,tx.	586
3	INFANT, NEWBORN.kw.	632
4	(newborn$ or neonate$).tw,tx.	1024
5	or/1-4	1180
6	HYPERBILIRUBINEMIA.kw.	3
7	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
8	hyperbilirubin?emia$.ti.	2
9	bilirubin?emia$.ti.	0
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw,tx.	5
11	JAUNDICE.kw.	15
12	jaundice$.ti.	10
13	or/6-12	19
14	(total adj3 serum adj3 bilirubin$).tw,tx.	15
15	(serum adj3 bilirubin$ adj3 level$).tw,tx.	24
16	tsb.tw,tx.	1
17	BILIRUBIN.kw.	4
18	(unconjugated adj3 bilirubin).tw,tx.	5
19	RISK ASSESSMENT.kw.	297
20	(risk$ adj3 (assess$ or index or model$)).tw,tx.	2532

21	RISK FACTORS.kw.	639
22	risk factor$.tw,tx.	1797
23	or/19-22	3770
24	MONITORING, PHYSIOLOGIC.kw.	24
25	(monitor$ or assess$ or check$ or measure$).tw,tx.	11886
26	or/14-18,24-25	11886
27	and/5,13,23,26	3

EMBASE 1980 to 2009 Week 12

JAUN_Q10_monitor_embase_200309

#	Searches	Results
1	PREMATURITY/	29715
2	preterm$.tw.	27075
3	NEWBORN/	179953
4	(newborn$ or neonate$).tw.	98486
5	or/1-4	241790
6	HYPERBILIRUBINEMIA/	5856
7	hyperbilirubin?emia$.ti.	1072
8	bilirubin?emia$.ti.	16
9	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	255
10	JAUNDICE/	10024

11	NEWBORN JAUNDICE/	1771
12	jaundice$.ti.	3683
13	or/6-12	18257
14	(total adj3 serum adj3 bilirubin$).tw.	1224
15	(serum adj3 bilirubin$ adj3 level$).tw.	1610
16	tsb.tw.	397
17	exp Bilirubin/	16861
18	bilirubin blood level/	7172
19	(unconjugated adj3 bilirubin).tw.	660
20	or/14-19	19735
21	risk assessment/	178969
22	risk factor/	242752
23	(risk$ adj3 (assess$ or index or model$)).tw.	38687
24	risk factor$.tw.	186438
25	or/21-24	459071
26	BIOLOGICAL MONITORING/	9396
27	(monitor$ or assess$ or check$ or measure$).tw.	2211279
28	or/26-27	2214066
29	or/20,28	2228449
30	and/5,13,25,29	278

CINAHL EBSCO

JAUN_Q10_monitor_cinahl_230309

Tuesday, March 24, 2009 7:53:17 AM

#	Query	Limiters/ Expanders	Last Run Via	Results
S31	S5 and S15 and S23 and S30	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	61
S30	S24 or S25 or S26 or S27 or S28 or S29	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	105500
S29	risk factor*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	92330
S28	MH RISK FACTORS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	35295
S27	risk* N3 model*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1390
S26	risk* N3 index*	Search modes -	Interface - EBSCOhost	626

		Boolean/Phrase	Search Screen - Advanced Search Database - CINAHL with Full Text	
S25	risk* N3 assess*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	21048
S24	MH RISK ASSESSMENT	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	16760
S23	S16 or S17 or S18 or S19 or S20 or S21 or S22	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	363637
S22	monitor* or assess* or check* or measure*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	354439
S21	MH MONITORING, PHYSIOLOGIC+	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	26751
S20	unconjugated N3 bilirubin	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	25

			Database - CINAHL with Full Text	
S19	MH BILIRUBIN/BL	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	289
S18	tsb	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	41
S17	serum N3 bilirubin* N3 level*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	85
S16	total N3 serum N3 bilirubin*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	90
S15	S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	742
S14	TI jaundice*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	328

S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	238
S12	hyperbilirubin* N3 encephalopath*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	3
S11	bilirubin* N3 encephalopath*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	32
S10	TI bilirubinemia	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1
S9	TI bilirubinaemia	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	0
S8	TI hyperbilirubinaemia	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	17
S7	TI hyperbilirubinemia	Search modes - Boolean/Phrase	Interface - EBSCOhost	140

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S6	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	234
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	46957
S4	(newborn* OR neonate*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	43950
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	41224
S2	preterm*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	5868
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	6597

			Database - CINAHL with Full Text	

QUESTION: What information and support should be given to parents/carers of babies with neonatal hyperbilirubinaemia?

Ovid MEDLINE(R) 1950 to March Week 3 2009

JAUN_Q13_infosupport_medline_010409_2

#	Searches	Results
1	INFANT, PREMATURE/	32387
2	preterm$.tw.	29486
3	INFANT, NEWBORN/	415634
4	(newborn$ or neonate$).tw.	137581
5	or/1-4	473662
6	HYPERBILIRUBINEMIA/	3391
7	HYPERBILIRUBINEMIA, NEONATAL/	179
8	hyperbilirubin?emia$.ti.	2160
9	bilirubin?emia$.ti.	148
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	288
11	exp JAUNDICE/	9897
12	jaundice$.ti.	9604
13	KERNICTERUS/	882

14	kernicterus.tw.	655
15	or/6-14	20332
16	HEALTH EDUCATION/ or PATIENT EDUCATION AS TOPIC/	97466
17	(information$ or education$ or communication$ or advice or advice).ti.	158771
18	PAMPHLETS/	2478
19	(booklet$ or leaflet$ or pamphlet$ or brochure$ or hand?out$).tw.	14834
20	(educat$ adj3 (video$ or literature$)).tw.	1128
21	SELF-HELP GROUPS/	6446
22	((support$ or self-help$) adj3 group$).tw.	9067
23	patient education handout.pt.	2643
24	guideline.pt.	14517
25	practice guideline.pt.	12999
26	HOTLINES/	1698
27	help line$.tw.	64
28	INTERNET/	28890
29	((internet or web) adj based).tw.	7028
30	TELEPHONE/	7139
31	(telephone adj2 support).tw.	230
32	or/16-31	309649
33	and/5,15,32	38

EBM Reviews - Cochrane Central Register of Controlled Trials 1st Quarter 2009

JAUN_Q13_infosupport_cctr_010409_2

#	Searches	Results
1	INFANT, PREMATURE/	1763
2	preterm$.tw.	3175
3	INFANT, NEWBORN/	8634
4	(newborn$ or neonate$).tw.	4338
5	or/1-4	11718
6	HYPERBILIRUBINEMIA/	58
7	HYPERBILIRUBINEMIA, NEONATAL/	11
8	hyperbilirubin?emia$.ti.	149
9	bilirubin?emia$.ti.	4
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	10
11	exp JAUNDICE/	54
12	jaundice$.ti.	199
13	KERNICTERUS/	2
14	kernicterus.tw.	8
15	or/6-14	450
16	HEALTH EDUCATION/ or PATIENT EDUCATION AS TOPIC/	5434
17	(information$ or education$ or communication$ or advice or advice).ti.	5700

18	PAMPHLETS/	393
19	(booklet$ or leaflet$ or pamphlet$ or brochure$ or hand?out$).tw.	1207
20	(educat$ adj3 (video$ or literature$)).tw.	209
21	SELF-HELP GROUPS/	333
22	((support$ or self-help$) adj3 group$).tw.	1865
23	patient education handout.pt.	6
24	guideline.pt.	24
25	practice guideline.pt.	17
26	HOTLINES/	55
27	help line$.tw.	5
28	INTERNET/	498
29	((internet or web) adj based).tw.	450
30	TELEPHONE/	713
31	(telephone adj2 support).tw.	122
32	or/16-31	12910
33	and/5,15,32	0

DARE, CDSR

JAUN_Q13_infosupport_cdsrdare_010409_2

#	Searches	Results
1	INFANT, PREMATURE.kw.	216

2	preterm$.tw,tx.	586
3	INFANT, NEWBORN.kw.	632
4	(newborn$ or neonate$).tw,tx.	1024
5	or/1-4	1180
6	HYPERBILIRUBINEMIA.kw.	3
7	HYPERBILIRUBINEMIA, NEONATAL.kw.	1
8	hyperbilirubin?emia$.ti.	2
9	bilirubin?emia$.ti.	0
10	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw,tx.	5
11	JAUNDICE.kw.	15
12	jaundice$.ti.	10
13	KERNICTERUS.kw.	1
14	kernicterus.tw,tx.	15
15	or/6-14	24
16	(HEALTH EDUCATION or PATIENT EDUCATION AS TOPIC).kw.	367
17	(information$ or education$ or communication$ or advice or advice).ti.	231
18	PAMPHLETS.kw.	5
19	(booklet$ or leaflet$ or pamphlet$ or brochure$ or hand?out$).tw,tx.	270
20	(educat$ adj3 (video$ or literature$)).tw,tx.	48
21	SELF-HELP GROUPS.kw.	32
22	((support$ or self-help$) adj3 group$).tw,tx.	787
23	patient education handout.pt.	0
24	guideline.pt.	0
25	practice guideline.pt.	0

26	HOTLINES.kw.	2
27	help line$.tw,tx.	13
28	INTERNET.kw.	23
29	((internet or web) adj based).tw,tx.	125
30	TELEPHONE.kw.	22
31	(telephone adj2 support).tw,tx.	45
32	or/16-31	1467
33	and/5,15,32	1

EMBASE 1980 to 2009 Week 13

JAUN_Q13_infosupport_embase_020409_2

#	Searches	Results
1	PREMATURITY/	29758
2	preterm$.tw.	27105
3	NEWBORN/	180064
4	(newborn$ or neonate$).tw.	98572
5	or/1-4	241975
6	HYPERBILIRUBINEMIA/	5862
7	hyperbilirubin?emia$.ti.	1072
8	bilirubin?emia$.ti.	16
9	((bilirubin$ or hyperbilirubin$) adj3 encephalopath$).tw.	255
10	JAUNDICE/	10032

11	NEWBORN JAUNDICE/	1772
12	jaundice$.ti.	3687
13	KERNICTERUS/	729
14	kernicterus$.ti.	154
15	or/6-14	18536
16	PATIENT INFORMATION/	12976
17	(information adj1 (provid$ or provision$ or supply$)).tw.	23297
18	PATIENT EDUCATION/	27311
19	(patient$ adj3 educat$).tw.	11149
20	(booklet$ or leaflet$ or pamphlet$ or brochure$ or hand?out$).tw.	11345
21	(educat$ adj3 (video$ or literature$)).tw.	634
22	SELF HELP/	3169
23	((support$ or self-help$) adj3 group$).tw.	7033
24	CONSUMER HEALTH INFORMATION/ or INFORMATION SERVICE/ or MEDICAL INFORMATION/	35285
25	INTERNET/ or TELEPHONE/	37478
26	(telephone adj2 support).tw.	160
27	((internet or web) adj based).tw.	5104
28	(hotline$ or help line$).tw.	378
29	exp PRACTICE GUIDELINE/	147283
30	or/16-29	286967
31	and/5,15,30	148

CINAHL EBSCO

JAUN_Q13_infosupport_embase_020409_5

Thursday, April 02, 2009 7:31:15 AM

#	Query	Limiters/ Expanders	Last Run Via	Results
S38	S5 and S17 and S37	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	113
S37	S18 or S19 or S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34 or S35 or S36	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	432694
S36	MH PRACTICE GUIDELINES	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	17274
S35	telephone N2 support	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	202
S34	web based	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	2229

			Database - CINAHL with Full Text	
S33	internet based	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	677
S32	MH INTERNET	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	12638
S31	help line*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	225
S30	helpline*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	345
S29	MH TELEPHONE INFORMATION SERVICES	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1589
S28	self-help N3 group*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	458

S27	selfhelp N3 group*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	3
S26	support* N3 group*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	7118
S25	MH SUPPORT GROUPS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	4537
S24	educat* N3 literature*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	856
S23	educat* N3 video*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	375
S22	booklet* or leaflet* or pamphlet* or brochure* or handout*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	3395
S21	MH PAMPHLETS	Search modes - Boolean/Phrase	Interface - EBSCOhost	1395

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S20	information* or education* or communication* or advice or advise	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	410021
S19	MH PATIENT EDUCATION	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	28363
S18	MH HEALTH EDUCATION	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	9160
S17	S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	813
S16	(TI "kernicterus*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S15	MH KERNICTERUS	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	Display

			Database - CINAHL with Full Text	
S14	(TI jaundice*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S13	MH JAUNDICE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S12	(AB "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S11	(TI "hyperbilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S10	(AB "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S9	(TI "bilirubin*" N3 "encephalopath*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

S8	(TI "bilirubinaemia" OR "bilirubinemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S7	(TI "hyperbilirubinemia" or "hyperbilirubinaemia")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S6	MH HYPERBILIRUBINEMIA	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S5	S1 or S2 or S3 or S4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S4	(TI "newborn*" or "neonate*") or (AB "newborn*" or "neonate*")	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S3	MH INFANT, NEWBORN	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display
S2	(TI "preterm*") or (AB "preterm*")	Search modes - Boolean/Phrase	Interface - EBSCOhost	Display

			Search Screen - Advanced Search Database - CINAHL with Full Text	
S1	MH INFANT, PREMATURE	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	Display

Appendix

G. Excluded studies

Q1. Which factors affect the relationship between neonatal hyperbilirubinaemia and kernicterus or other adverse outcomes (neurodevelopmental, auditory)?

Reference	Reason for exclusion
Bertini G, Dani C, Tronchin M *et al.* Is breastfeeding really favoring early neonatal jaundice? *Pediatrics* 2001; 107:(3)E41.	No analysis for confounding variables
Beutner D, Foerst A, Lang-Roth R *et al.* Risk factors for auditory neuropathy/auditory synaptopathy. *ORL* 2007; 69:(4)239-44.	No adjustment for confounding variables
Bhutani VK and Johnson LH. Jaundice technologies: prediction of hyperbilirubinemia in term and near-term newborns. *Journal of Perinatology* 2001; 21 Suppl 1:S76-S82.	Overview
Bhutani VK. Combining clinical risk factors with serum bilirubin levels to predict hyperbilirubinemia in newborns. *Journal of Pediatrics* 2005; 147:(1)123-4.	Synopsis
Blackmon LR, Fanaroff AA, and Raju TNK. Research on prevention of bilirubin-induced brain injury and kernicterus: National Institute of Child Health and Human Development conference executive summary. *Pediatrics* 2004; 114:(1)229-33.	Overview of jaundice research

Brites D, Fernandes A, Falcao AS *et al.* Biological risks for neurological abnormalities associated with hyperbilirubinemia. *J Perinatol* 0 AD; 29:(S1)S8-S13.	Overview - Background
Cronin CM, Brown DR, and hdab-Barmada M. Risk factors associated with kernicterus in the newborn infant: importance of benzyl alcohol exposure. *American Journal of Perinatology* 1991; 8:(2)80-5.	Benzyl alcohol as a risk factor for kernicterus
De Vries LS, Lary S, Whitelaw AG *et al.* Relationship of serum bilirubin levels and hearing impairment in newborn infants. *Early Human Development* 1987; 15:(5)269-77.	Outcome not of interest to this guideline
Ding G, Zhang S, Yao D *et al.* An epidemiological survey on neonatal jaundice in China. *Chinese Medical Journal* 2001; 114:(4)344-7.	No adjustment for confounding variables
Frishberg Y, Zelicovic I, Merlob P *et al.* Hyperbilirubnemia and influencing factors in term infants. *Israel Journal of Medical Sciences* 1989; 25:(1)28-31.	Confounders not controlled for
Gagnon AJ, Waghorn K, Jones MA *et al.* Indicators nurses employ in deciding to test for hyperbilirubinemia. *JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing* 2001; 30:(6)626-33.	Background
Gartner LM and Arias IM. Studies of prolonged neonatal jaundice in the breast-fed infant. *Journal of Pediatrics* 1966; 68:(1)54-66.	No adjustment for confounders
Geiger AM, Petitti DB, and Yao JF. Rehospitalisation for neonatal jaundice: risk factors and outcomes. *Paediatric and Perinatal Epidemiology* 2001; 15:(4)352-8.	Risk factors for jaundice readmission – confounders not controlled for
Gourley GR. Another risk factor for neonatal hyperbilirubinemia. *Journal of Pediatric Gastroenterology and Nutrition* 2005; 40:(3)388-9.	Synospis
Grupp-Phelan J, Taylor JA, Liu LL *et al.* Early newborn hospital discharge and readmission for mild and severe jaundice. *Archives of Pediatrics and Adolescent Medicine* 1999; 153:(12)1283-8.	Effect of early discharge on jaundice readmission rates
Guo X, Pu X, An T *et al.* Characteristics of brainstem auditory evoked potential of neonates with mild or moderate hyperbilirubinemia. *Neural Regeneration Research* 2007; 2:(11)660-4.	No comparison group
Hall RT, Simon S, and Smith MT. Readmission of breastfed infants in the first 2 weeks of life. *Journal of Perinatology* 2000; 20:(7)432-7.	Risk factors for re-admission of breastfed babies
Harris MC, Bernbaum JC, Polin JR *et al.* Developmental follow-up of breastfed term and near-term	Developmental follow-up of babies with bilirubin > 451 micromol/L

infants with marked hyperbilirubinemia. *Pediatrics* 2001; 107:(5)1075-80.	
Huang MJ, Kua KE, Teng HC *et al.* Risk factors for severe hyperbilirubinemia in neonates. *Pediatric Research* 2004; 56:(5)682-9.	Only breastfeeding and genetic risk factors considered
Iranpour R, Akbar MR, and Haghshenas I. Glucose-6-Phosphate Dehydrogenase Deficiency in Neonates. *Indian Journal of Pediatrics* 2003; 70:(11)855-7.	G-6-PD deficiency as a risk factor for jaundice
Johnson L. Hyperbilirubinemia in the term infant: When to worry, when to treat. *New York State Journal of Medicine* 1991; 91:(11)483-9.	Overview
Kaplan M, Bromiker R, Schimmel MS *et al.* Evaluation of discharge management in the prediction of hyperbilirubinemia: the Jerusalem experience. *Journal of Pediatrics* 2007; 150:(4)412-7.	Effect of discharge management on readmission rates
Kaplan M, Herschel M, Hammerman C *et al.* Neonatal hyperbilirubinemia in African American males: the importance of glucose-6-phosphate dehydrogenase deficiency. *Journal of Pediatrics* 2006; 149:(1)83-8.	Study restricted to African-American males babies
Madlon-Kay DJ. The clinical significance of ABO blood group incompatibility. *Archives of Family Medicine* 1993; 2:(3)285-7.	ABO incompatibility as a risk factor for jaundice
Maisels MJ and Kring E. Length of stay, jaundice, and hospital readmission. *Pediatrics* 1998; 101:(6)995-8.	Risk factors for readmission for jaundice – confounders not controlled for
Nakamura H. Assessing the risk of kernicterus. *Indian Journal of Pediatrics* 1987; 54:(5)625-31.	Unbound bilirubin as a risk factor for kernicterus
Ogun B, Serbetcioglu B, Duman N *et al.* Long-term outcome of neonatal hyperbilirubinaemia: subjective and objective audiological measures. *Clinical Otolaryngology and Allied Sciences* 2003; 28:(6)507-13.	Long-term sequelae of hyperbilirubinaemia
Olusanya BO, Akande AA, Emokpae A *et al.* Infants with severe neonatal jaundice in Lagos, Nigeria: Incidence, correlates and hearing screening outcomes. *Tropical Medicine and International Health* 2009; 14:(3)301-10.	Effect of severe neonatal jaundice on hearing outcomes
Paul IM, Lehman EB, Hollenbeak CS *et al.* Preventable newborn readmissions since passage of the Newborns' and Mothers' Health Protection Act. *Pediatrics* 2006; 118:(6)2349-58.	Predictors of readmission after hospital discharge
Paul IM, Phillips TA, Widome MD *et al.* Cost-effectiveness of postnatal home nursing visits for prevention of hospital care for jaundice and dehydration. *Pediatrics* 2004; 114:(4)1015-22.	Not relevant to this quideline

Phuapradit W, Chaturachinda K, and Auntlamai S. Risk factors for neonatal hyperbilirubinemia. *Journal of the Medical Association of Thailand* 1993; 76:(8)424-8.	No regression analysis
Sales de Almeida F, Pialarissi PR, Monte AA *et al.* Otoacoustic emissions and ABR: Study in hyperbilirubinemic newborns. *Revista Brasileira de Otorrinolaringologia* 2002; 68:(6)851-7.	Outcome not of interest to this guideline
Sarici SU, Serdar MA, Korkmaz A *et al.* Incidence, course, and prediction of hyperbilirubinemia in near-term and term newborns. *Pediatrics* 2004; 113:(4)775-80.	Not adjustment for confounding variables
Setia S, Villaveces A, Dhillon P *et al.* Neonatal jaundice in Asian, white, and mixed-race infants. *Archives of Pediatrics and Adolescent Medicine* 2002; 156:(3)276-9.	Ethnicity (at least one Asian parent) as a risk factor for jaundice
Shah VA and Cheo LY. Identifying risk of neonatal hyperbilirubinaemia and early discharge for glucose-6-phosphate dehydrogenase deficient newborns in Singapore. *Annals of the Academy of Medicine Singapore* 2007; 36:(12)1003-9.	G-6-PD deficient babies only
Stiehm ER and Ryan J. Breast-milk jaundice. Report of eight cases and effect of breast feeding on incidence and severity of unexplained hyperbilirubinaemia. *American Journal of Diseases of Children* 1965; 109:212-6.	Case-studies
Thoma J, Gerull G, and Mrowinski D. A long-term study of hearing in children following neonatal hyperbilirubinemia. *Archives of Oto-Rhino-Laryngology* 1986; 243:(2)133.	Non-comparative study
Tudehope D, Bayley G, Munro D *et al.* Breast feeding practices and severe hyperbilirubinaemia. *Journal of Paediatrics and Child Health* 1991; 27:(4)240-4.	Link between breastfeeding and early onset jaundice
van de Bor M, Ens-Dokkum M, Schreuder AM *et al.* Hyperbilirubinemia in low birth weight infants and outcome at 5 years of age. *Pediatrics* 1992; 89:(3)359-64.	Outcome, at 5 year, of low birthweight babies with hyperbilirubinamia
van de Bor M, van Zeben-van der Aa TM	Long term sequelae of hyperbilirubinaemia in preterm babies
, Verloove-Vanhorick SP *et al.* Hyperbilirubinemia in preterm infants and neurodevelopmental outcome at 2 years of age: Results of a national collaborative survey. *Pediatrics* 1989; 83:(6)915-20.	
Vohr BR. New approaches to assessing the risks of hyperbilirubinemia. *Clinics in Perinatology* 1990; 17:(2)293-306.	Overview
Watchko JF. Neonatal hyperbilirubinemia -- what are the risks? *New England Journal of Medicine* 2006;	Overview

354:(18)1947-9.	
Yaish HM, Niazi GA, Al S *et al.* Increased incidence of hyperbilirubinaemia in 'unchallenged' glucose-6-phosphate dehydrogenase deficiency in term Saudi newborns. *Annals of Tropical Paediatrics* 1991; 11:(3)259-66.	No adjustment for confounding variables
Young-Lewis LE. Factors contributing to the readmission of previously healthy low-risk neonates for hyperbilirubinemia. *(CASE WESTERN RESERVE UNIVERSITY) **1996; PH.D* 146.	PHd thesis

Q2. What is the best method of recognizing hyperbilirubinaemia?

Q3. When should a baby with hyperbilirubinaemia be referred for further testing or formal assessment?

Q5. How useful are the following tests in predicting neonatal hyperbilirubinaemia?

Reference	**Reason for exclusion**
Akman I, Arikan C, Bilgen H *et al.* Transcutaneous measurement of bilirubin by icterometer during phototherapy on a bilibed. *Turkish Journal of Medical Sciences* 2002; 32:(2)165-8.	Transcutaneous measurement undergoing phototherapy
Amato M, Huppi P, and Markus D. Assessment of neonatal jaundice in low birth weight infants comparing transcutaneous, capillary and arterial bilirubin levels. *European Journal of Pediatrics* 1990; 150:(1)59-61.	Poor quality study – EL3
Awasthi S and Rehman H. Early prediction of neonatal hyperbilirubinemia. *Indian Journal of Pediatrics* 1998; 65:(1)131-9.	Poor quality study – EL3
Barko HA, Jackson GL, and Engle WD. Evaluation of a point-of-care direct spectrophotometric method for measurement of total serum bilirubin in term and near-term neonates. *Journal of Perinatology* 2006; 26:(2)100-5.	Poor quality study – EL3

Bhardwaj HP, Narang A, and Bhakoo ON. Evaluation of Minolta jaundicemeter and icterometer for assessment of neonatal jaundice. *Indian Pediatrics* 1989; 26:(2)161-5.	Poor quality study – EL3
Bhat V, Srinivasan S, Usha TS *et al.* Correlation of transcutaneous bilirubinometry with serum bilirubin in south Indian neonates. *Indian Journal of Medical Research* 1987; 86:49-52.	Reference tests was not a laboratory based test
Bhat YR and Rao A. Transcutaneous bilirubin in predicting hyperbilirubinemia in term neonates. *Indian Journal of Pediatrics* 2008; 75:(2)119-23.	Poor quality study
Bjerre JV and Ebbesen F. [Incidence of kernicterus in newborn infants in Denmark]. *Ugeskrift for Laeger* 2006; 168:(7)686-91.	Non-English language article
Bourchier D, Cull AB, and Oettli PE. Transcutaneous bilirubinometry: 22 months experience at Waikato women's Hospital. *New Zealand Medical Journal* 1987; 100:(832)599-600.	Unclear of timing of tests
Bredemeyer SL, Polverino JM, and Beeby PJ. Assessment of jaundice in the term infant - accuracy of transcutaneous bilirubinometers compared with serum bilirubin levels: part two. *Neonatal, Paediatric and Child Health Nursing* 2007; 10:(1)5-10, 12.	Poor quality study – EL3
Brouwers HA, Overbeeke MA, van E, I *et al.* What is the best predictor of the severity of ABO-haemolytic disease of the newborn? *Lancet* 1988; 2:641-4.	Study evaluating predictors of the severity of ABO-haemolytic disease of the newborn
Carapella E, Gloria-Bottini F, Tucciarone L *et al.* Annotations on the hyperbilirubinaemia of ABO incompatible infants. *Haematologia* 1982; 15:(1)127-33.	Not relevant to this guideline
Carceller-Blanchard A, Cousineau J, and Delvin EE. Point of care testing: transcutaneous bilirubinometry in neonates. *Clinical Biochemistry* 2009; 42:(3)143-9.	Background information
Centre for Reviews and Dissemination. The value of routine bilirubin screening to detect significant hyperbilirubinemia in Thai healthy term newborns (Brief record). *NHS Economic Evaluation Database (NHSEED)* 2008;(2).	Synopsis
Centre for Reviews and Dissemination. Using Bilicheck for preterm neonates in a sub-intensive unit: diagnostic usefulness and suitability (Brief record). *NHS Economic Evaluation Database (NHSEED)* 2008;(2).	Synopsis
Chuansumrit A, Siripoonya P, Nathalang O *et al.* The benefit of the direct antiglobulin test using gel technique in ABO hemolytic disease of the newborn. *Southeast Asian Journal of Tropical Medicine and*	Comparison of two methods of DAT testing

Public Health 1997; 28:(2)428-31.	
Conseil d'Evaluation des Technologies de la Sante. Transcutaneous bilirubinometry in the context of early postnatal discharge (Structured abstract). *Health Technology Assessment Database* 2008;(3).	Overview
Dai J, Krahn J, and Parry DM. Clinical impact of transcutaneous bilirubinometry as an adjunctive screen for hyperbilirubinemia. *Clinical Biochemistry* 1996; 29:(6)581-6.	Effectiveness of Minolta JM-102
De Luca D, Romagnoli C, Tiberi E *et al.* Skin bilirubin nomogram for the first 96 h of life in a European normal healthy newborn population, obtained with multiwavelength transcutaneous bilirubinometry. *Acta Paediatrica, International Journal of Paediatrics* 2008; 97:(2)146-50.	Development of a nomogram based on transcutaneous measurement
De Luca D, Zecca E, Zuppa AA *et al.* The joint use of human and electronic eye: Visual assessment of jaundice and transcutaneous bilirubinometry. *Turkish Journal of Pediatrics* 2008; 50:(5)456-61.	Incomplete data – correlation data or sensitivity/specificity data not reported
Dinesh D. Review of positive direct antiglobulin tests found on cord blood sampling. *Journal of Paediatrics and Child Health* 2005; 41:(9-10)504-10.	Incomplete data – number of true negative snot reported
Donzelli G and Pratesi S. Transcutaneous bilirubinometry in healthy preterm newborns. *Clinical Biochemistry* 2000; 33:(6)505-8.	Study examined the use of JM-102 in preterm babies
Engle WD, Jackson GL, Sendelbach D *et al.* Assessment of a transcutaneous device in the evaluation of neonatal hyperbilirubinemia in a primarily Hispanic population. *Pediatrics* 2002; 110:(1 I)61-7.	Not all tests carried out with 1-hour
Facchini FP, Mezzacappa MA, Rosa IRM *et al.* Follow-up of neonatal jaundice in term and late premature newborns. [Portuguese, English]. *Jornal de Pediatria* 2007; 83:(4)313-8.	Not a comparative study
Flaherman VJ, Ferrara A, and Newman TB. Predicting significant hyperbilirubinaemia using birth weight. *Archives of Disease in Childhood - Fetal and Neonatal Edition* 2008; 93:(4)F307-F309.	Birthweight as a predictor for hyperbilirubinaemia
Goldman SL, Penalver A, and Penaranda R. Jaundice meter: evaluation of new guidelines. *Journal of Pediatrics* 1982; 101:(2)253-6.	Poor quality study – EL3
Gonzaba G. Research corner. End tidal carbon monoxide: a new method to detect hyperbilirubinemia in newborns. *Newborn and Infant Nursing Reviews* 2007; 7:(2)122-8.	Overview
Grohmann K, Roser M, Rolinski B *et al.* Bilirubin measurement for neonates: comparison of 9 frequently used methods. *Pediatrics* 2006; 117:(4)1174-83.	Poor quality study – EL3

Gupta PC, Kumari S, Mullick DN *et al.* Icterometer: a useful screening tool for neonatal jaundice. *Indian Pediatrics* 1991; 28:(5)473-6.	Poor quality study – EL3
Harish R and Sharma DB. Transcutaneous bilirubinometry in neonates: evaluation of Minolta Air shields jaundicemeter. *Indian Pediatrics* 1998; 35:(3)264-7.	Poor quality study – EL3
Hegyi T, Hiatt IM, and Indyk L. Transcutaneous bilirubinometry. I. Correlations in term infants. *Journal of Pediatrics* 1981; 98:(3)454-7.	Poor quality study – EL3
Ho EY, Lee SY, Chow CB *et al.* BiliCheck transcutaneous bilirubinometer: a screening tool for neonatal jaundice in the Chinese population. *Hong Kong Medical Journal* 2006; 12:(2)99-102.	Poor quality study – EL3
Ho HT, Ng TK, Tsui KC *et al.* Evaluation of a new transcutaneous bilirubinometer in Chinese newborns. *Archives of Disease in Childhood: Fetal and Neonatal Edition* 2006; 91:(6)F434-F438.	Poor quality study – EL3
Jangaard KA, Curtis H, and Goldbloom RB. Estimation of bilirubin using BiliChek[trademark], a transcutaneous bilirubin measurement device: Effects of gestational age and use of phototherapy. *Paediatrics and Child Health* 2006; 11:(2)79-83.	Data not relevant – overestimation an underestimation of tests
Janjindamai W and Tansantiwong T. Accuracy of transcutaneous bilirubinometer estimates using BiliCheck in Thai neonates. *Journal of the Medical Association of Thailand* 2005; 88:(2)187-90.	Poor quality study – EL3
Kaplan M, Hammerman C, Feldman R *et al.* Predischarge bilirubin screening in glucose-6-phosphate dehydrogenase- deficient neonates. *Pediatrics* 2000; 105:(3)533-7.	Female subjects were included from a retrospective studies
Kaplan M, Shchors I, Algur N *et al.* Visual screening versus transcutaneous bilirubinometry for predischarge jaundice assessment. *Acta Paediatrica* 2008; 97:(6)759-63.	Timing of tests not specified
Kazmierczak S, Bhutani V, Gourley G, Kerr S, Lo S, Robertson A, and Sena SF. Transcutaneous bilirubin testing. Laboratory medicine practice guidelines: evidence-based practice for point-of-care testing. Washington DC: National Academy of Clinical Biochemistry; 2006.	Review of transcutaneous bilirubinometers
Keren, R.; Luan, X.; Tremont, K.; Cnaan, A. Visual Assessment of Jaundice in Term and Late Preterm Infants. *Arch. Dis. Child. Fetal Neonatal Ed.* 2009,	Test timing was 8 hours
Knudsen A and Ebbesen F. Transcutaneous bilirubinometry in neonatal intensive care units. *Archives of Disease in Childhood* 1996; 75:(1 SUPPL.)F53-F56.	Study not relevant – multiple regression used to study different factors

Knudsen A. Predicting the need for phototherapy in healthy mature neonates using transcutaneous bilirubinometry on the first postnatal day. *Biology of the Neonate* 1995; 68:(6)398-403.	Poor quality study – EL3
Knudsen A. Prediction of the development of neonatal jaundice by increased umbilical cord blood bilirubin. *Acta Paediatrica Scandinavica* 1989; 78:(2)217-21.	Poor quality study – EL3
Knudsen A. The cephalocaudal progression of jaundice in newborns in relation to the transfer of bilirubin from plasma to skin. *Early Human Development* 1990; 22:(1)23-8.	Deals with progression of bilirubin from plasma to skin
Knupfer M, Pulzer F, Braun L *et al.* Transcutaneous bilirubinometry in preterm infants. *Acta Paediatrica, International Journal of Paediatrics* 2001; 90:(8)899-903.	Transcutaneous measurement in pre-term babies
Kolman KB, Mathieson KM, and Frias C. A comparison of transcutaneous and total serum bilirubin in newborn hispanic infants at 35 or more weeks of gestation. *Journal of the American Board of Family Medicine* 2007; #20:(3)266-71.	Not all babies tested
Kumar A, Faridi MM, Singh N *et al.* Transcutaneous bilirubinometry in the management of bilirubinemia in term neonates. *Indian Journal of Medical Research* 1994; 99:227-30.	Unclear of timing of tests
Lim HH, Daniel LM, Lee J *et al.* Predicting significant hyperbilirubinaemia and early discharge for glucose-6-phosphate dehydrogenase deficient newborns. *Annals of the Academy of Medicine Singapore* 2003; 32:(2)257-61.	Coombs' test only used if phototherapy was indicated
Linder N, Regev A, Gazit G *et al.* Noninvasive determination of neonatal hyperbilirubinemia: standardization for variation in skin color. *American Journal of Perinatology* 1994; 11:(3)223-5.	Timing of tests = 4 hours
Mahajan G, Kaushal RK, Sankhyan N *et al.* Transcutaneous bilirubinometer in assessment of neonatal jaundice in northern India. *Indian Pediatrics* 2005; 42:(1)41-5.	Minolta JM-101 was used – not a transcutaneous bilirubinometer of interest
Maisels MJ and Kring E. Transcutaneous bilirubinometry decreases the need for serum bilirubin measurements and saves money. *Pediatrics* 1997; 99:(4)599-601.	Health economic analysis of JM-102
Mercier CE, Barry SE, Paul K *et al.* Improving newborn preventive services at the birth hospitalization: a collaborative, hospital-based quality-improvement project. *Pediatrics* 2007; 120:(3)481-8.	Quality improvement programme not relevant to this guideline
Namba F and Kitajima H. Utility of a new transcutaneous jaundice device with two optical paths in premature infants. *Pediatrics International* 2007; 49:(4)497-501.	Poor quality study

Narayanan I, Banwalikar J, Mehta R *et al.* A simple method of evaluation of jaundice in the newborn. *Annals of Tropical Paediatrics* 1990; 10:(1)31-4.	Unclear if tests were within 1 hour
Nasser B and de M. Bilirubin dosage in cord blood: Could it predict neonatal hyperbilirubinemia? *Sao Paulo Medical Journal* 2004; 122:(3)99-103.	Incomplete data
Orzalesi M, Gloria-Bottini F, Lucarelli P *et al.* ABO system incompatibility: evaluation of risk of hyperbilirubinaemia at birth by multivariate discriminant analysis. *Experientia* 1983; 39:(1)89-91.	Only babies with blood group incompatibility were included
Prasarnphanich T and Somlaw S. The value of routine bilirubin screening to detect significant hyperbilirubinemia in Thai healthy term newborns. *Journal of the Medical Association of Thailand* 2007; 90:(5)925-30.	Poor quality study – EL3
Randeberg LL, Roll EB, Nilsen LT *et al.* In vivo spectroscopy of jaundiced newborn skin reveals more than a bilirubin index. *Acta Paediatrica* 2005; 94:(1)65-71.	Ways to improve algorithm for transcutaneous measurement
Robertson A, Kazmierczak S, and Vos P. Improved transcutaneous bilirubinometry: comparison of SpectR(X) BiliCheck and Minolta Jaundice Meter JM-102 for estimating total serum bilirubin in a normal newborn population. *Journal of Perinatology* 2002; 22:(1)12-4.	Data not extractable
Rodriguez-Capote K, Kim K, Paes B *et al.* Clinical implication of the difference between transcutaneous bilirubinometry and total serum bilirubin for the classification of newborns at risk of hyperbilirubinemia. *Clinical Biochemistry* 2009; 42:(3)176-9.	Nidrect comparison of Minolta JM-103 and BiliChek
Rosenfeld J. Umbilical cord bilirubin levels as a predictor of subsequent hyperbilirubinemia. *Journal of Family Practice* 1986; 23:(6)556-8.	Retrospective study
Rubegni P, Cevenini G, Sbano P *et al.* Cutaneous colorimetric evaluation of serum concentrations of bilirubin in healthy term neonates: a new methodological approach. *Skin Research and Technology* 2005; 11:(1)70-5.	Device being tested not relevant to this guideline
Ruchala PL, Seibold L, and Stremsterfer K. Validating assessment of neonatal jaundice with transcutaneous bilirubin measurement. *Neonatal Network: The Journal of Neonatal Nursing* 1996; 15:(4)33-7.	Correlation of visual inspection and transcutaneous measurement
Ruskandi M, Garna H, and Alisjahbana A. The use of icterometer in assessing neonatal jaundice. *Paediatrica Indonesiana* 1978; 18:(5-6)158-63.	Not clear if tests were carried out within 2 hour

Sanpavat S and Nuchprayoon I. Comparison of two transcutaneous bilirubinometers--Minolta AirShields Jaundice Meter JM103 and Spectrx Bilicheck--in Thai neonates. *Southeast Asian Journal of Tropical Medicine and Public Health* 2005; 36:(6)1533-7.	Poor quality study – EL3
Sanpavat S, Nuchprayoon I, Smathakanee C *et al.* Nomogram for prediction of the risk of neonatal hyperbilirubinemia, using transcutaneous bilirubin. *Journal of the Medical Association of Thailand* 2005; 88:(9)1187-93.	No reference test used
Serrao PA and Modanlou HD. Significance of anti-A and anti-B isohemagglutinins in cord blood of ABO incompatible newborn infants: correlation with hyperbilirubinemia. *Journal of Perinatology* 1989; 9:(2)154-8.	Transcutaneous bilirubin used as the reference test
Sheridan-Pereira M and Gorman W. Transcutaneous bilirubinometry: An evaluation. *Archives of Disease in Childhood* 1982; 57:(9)708-10.	Unclear of timing of tests
Smith DW, Inguillo D, Martin D *et al.* Use of noninvasive tests to predict significant jaundice in full-term infants: preliminary studies. *Pediatrics* 1985; 75:(2)278-80.	Correspondence
Stein H, Wolfsdorf J, and Buchanan N. The use of the icterometer in assessing neonatal jaundice. *Journal of Tropical Pediatrics and Environmental Child Health* 1975; 21:(2)67-8.	Unclear of timing of tests
Stepensky P, Revel-Vilk S, Weintraub M *et al.* Combination of umbilical cord blood with BM from a 2-month-old sibling as lifesaving BMT for very severe aplastic anemia. *Bone Marrow Transplantation* 2008; 42:(8)563-4.	Correspondence
Surjono A, Triasih R, and Haksari EL. The first 24 hours bilirubin level as a predictor of hyperbilirubinemia in healthy term newborns. *Perinatology* 2003; 5:(4)159-66.	Incomplete data
Taha SA, Karrar ZA, and Dost SM. Transcutaneous bilirubin measurement in evaluating neonatal jaundice among Saudi newborns. *Annals of Tropical Paediatrics* 1984; 4:(4)229-31.	Duplicate publication
Tan KL and Dong F. Transcutaneous bilirubinometry during and after phototherapy. *Acta Paediatrica, International Journal of Paediatrics* 2003; 92:(3)327-31.	Use of transcutaneous bilirubinometer during and after phototherapy
Tan KL, Chia HP, and Koh BC. Transcutaneous bilirubinometry in Chinese, Malay and Indian infants. *Acta Paediatrica, International Journal of Paediatrics* 1996; 85:(8)986-90.	Incomplete data – data not available for 262 babies
Tan KL. Neonatal jaundice in 'healthy' very low birthweight infants. *Australian Paediatric Journal* 1987;	No comparison goup

23:(3)185-8.	
Tan KL. Transcutaneous bilirubinometry in Chinese and Malay neonates. *Annals of the Academy of Medicine Singapore* 1985; 14:(4)591-4.	Some babies had been exposed to phototherapy
Venkataseshan S, Murki S, and Kumar P. Non-invasive bilirubinometry in neonates. *Perinatology* 2004; 6:(6)315-9.	Commentary
Wainer S, Bolton KD, Cooper PA *et al.* Transcutaneous bilirubinometry in black infants: Improved reliability after correction for the background signal. *Pediatric Reviews and Communications* 1989; 4:(1-2)93-2.	Importance of background signal in transcutaneous bilirubin measurements
Wainer S, Rabi J, Lyon M *et al.* Coombs' testing and neonatal hyperbilirubinemia... Sgro M, Campbell D, Shah V. Incidence and causes of severe hyperbilirubinemia in Canada. CMAJ 2006;175(6):587-90. *CMAJ: Canadian Medical Association Journal* 2007; 176:(7)972-3, 976.	Correspondence
Webster J, Blyth R, and Nugent F. An appraisal of the use of the Kramer's scale in predicting hyperbilirubinaemia in healthy full term infants. *Birth Issues* 2005; 14:(3)83-9.	Data not extractable
Willems WA, Von D, De W *et al.* Transcutaneous bilirubinometry with the Bilicheck in very premature newborns. *Journal of Maternal-Fetal and Neonatal Medicine* 2004; 16:(4)-Fetal.	Data not relevant
Wong CM, Van Dijk P, and Laing IA. A comparison of transcutaneous bilirubinometers: SpectRx BiliCheck versus Minolta AirShields. *Archives of Disease in Childhood: Fetal and Neonatal Edition* 2002; 87:(2)F137-F140.	Poor quality study – EL3
Wong V, Chen WX, and Wong KY. Short- and long-term outcome of severe neonatal nonhemolytic hyperbilirubinemia. *Journal of Child Neurology* 2006; 21:(4)309-15.	Outcomes of severe hyperbilirubinaemia
Yamauchi Y and Yamanouchi I. Clinical application of transcutaneous bilirubin measurement. Early prediction of hyperbilirubinemia. *Acta Paediatrica Scandinavica* 1990; 79:(4)385-90.	Poor quality study – EL3
Yamauchi Y and Yamanouchi I. Transcutaneous bilirubinometry in normal Japanese infants. *Acta Paediatrica Japonica (Overseas Edition)* 1989; 31:(Overseas Edition)65-72.	Time between compared tests greater than 1 hour
Yamauchi Y and Yamanouchi I. Transcutaneous bilirubinometry: serum bilirubin measurement using transcutaneous bilirubinometer (TcB). A preliminary study. *Biology of the Neonate* 1989; 56:(5)257-62.	Test of different curvettes for Minolta JM

Yap SH, Mohammad I, and Ryan CA. Avoiding painful blood sampling in neonates by transcutaneous bilirubinometry. *Irish Journal of Medical Science* 2002; 171:(4)188-90.	Unclear of time between testing
Yasuda S, Itoh S, Isobe K *et al.* New transcutaneous jaundice device with two optical paths. *Journal of Perinatal Medicine* 2003; 31:(1)81-8.	No possible to extract data

Q4. What should be included in a formal assessment of a baby with neonatal hyperbilirubinaemia?

Reference	Reason for exclusion
Abolghasemi H, Mehrani H, and Amid A. An update on the prevalence of glucose-6-phosphate dehydrogenase deficiency and neonatal jaundice in Tehran neonates. *Clinical Biochemistry* 2004; 37:(3)241-4.	Babies were only tested for G-6-PD
Adachi Y, Katoh H, Fuchi I *et al.* Serum bilirubin fractions in healthy subjects and patients with unconjugated hyperbilirubinemia. *Clinical Biochemistry* 1990; 23:(3)247-51.	Diagnostic criteria not specified
Ahlfors CE and Parker AE. Evaluation of a model for brain bilirubin uptake in jaundiced newborns. *Pediatric Research* 2005; 58:(6)1175-9.	Modelling study
Ahlfors CE and Parker AE. Unbound bilirubin concentration is associated with abnormal automated auditory brainstem response for jaundiced newborns. *Pediatrics* 2008; 121:(5)976-8.	Test not relevant to this guideline - value of Auditory brainstem response as a predictor of kernicterus
Ahlfors CE and Wennberg RP. Bilirubin-albumin binding and neonatal jaundice. *Seminars in Perinatology* 2004; 28:(5)334-9.	Commentary
Ahlfors CE, Amin SB, and Parker AE. Unbound bilirubin predicts abnormal automated auditory brainstem response in a diverse newborn population. *Journal of Perinatology* 2009; 29:(4)305-9.	Test not relevant to this guideline
Ahlfors CE. Bilirubin-albumin binding and free bilirubin. *Journal of Perinatology* 2001; 21:(SUPPL. 1)S40-S42.	Commentary
Ahlfors CE. Criteria for exchange transfusion in jaundiced newborns. *Pediatrics* 1994;	Using the bilirubin/albumin ratio and indicator for exchange transfusion

93:(3)488-94.	
Ahlfors CE. Measurement of plasma unbound unconjugated bilirubin. *Analytical Biochemistry* 2000; 279:(2)130-5.	Comparison of different methods for measuring conjugated bilirubin
Ahlfors CE. Unbound bilirubin associated with kernicterus: a historical approach. *Journal of Pediatrics* 2000; 137:(4)540-4.	Theoretic analysis of laboratory data
Ahmadi AH and Ghazizadeh Z. Evaluation of glucose-6-phosphate dehydrogenase deficiency without hemolysis in icteric newborns at Mazandaran province, Iran. *Pakistan Journal of Biological Sciences* 2008; 11:(10)1394-7.	Physiological jaundice was excluded
Ahmed P and Ahmad KN. Screening of the newborns for glucose-6-phosphate dehydrogenase deficiency. *Indian Pediatrics* 1983; 20:(5)351-5.	Babies with ABO or Rh incompatibility were excluded
Akman I, Ozek E, Kulekci S *et al.* Auditory neuropathy in hyperbilirubinemia: is there a correlation between serum bilirubin, neuron-specific enolase levels and auditory neuropathy? *International Journal of Audiology* 2004; 43:(9)516-22.	Babies with haemolysis were excluded
Al-Dabbous IA, Owa JA, and Al-Khater NS. Neonatal jaundice in Qatif: The role of glucose-6-phosphate dehydrogenase deficiency in the etiology among outpatient cases. *Annals of Saudi Medicine* 1995; 15:(5)539-41.	No entry level criteria for jaundice were used
Alden ER, Lynch SR, and Wennberg RP. Carboxyhemoglobin determination in evaluating neonatal jaundice. *American Journal of Diseases of Children* 1974; 127:(2)214-7.	Tests not relevant to this guideline
Al-Magamci MSF, Khan A, Bhat BA *et al.* Neonatal jaundice: An etiological survey in the Madinah region. *Annals of Saudi Medicine* 1996; 16:(2)221-3.	Subjects with physiological jaundice were excluded
Al-Naama LM, Al-Sadoon IA, and Al-Naama MM. Neonatal jaundice and glucose-6-phosphate dehydrogenase deficiency in Basrah. *Annals of Tropical Paediatrics* 1987; 7:(2)134-8.	Babies were not tested for blood group incompatibility
AlOtaibi SF, Blaser S, and MacGregor DL. Neurological complications of kernicterus. *Canadian Journal of Neurological Sciences* 2005; 32:(3)311-5.	Unclear if blood group incompatibility was tested for
Amin SB, Ahlfors C, Orlando MS *et al.* Bilirubin and serial auditory brainstem	Data from this study was contained in an included review

responses in premature infants. *Pediatrics* 2001; 107:(4)664-70.	
Amin SB. Clinical assessment of bilirubin-induced neurotoxicity in premature infants. *Seminars in Perinatology* 2004; 28:(5)340-7.	Overview
Arias IM, Gartner LM, Seifter S *et al.* Prolonged neonatal unconjugated hyperbilirubinemia associated with breast feeding and a steroid, Pregnane-3(Alpha), 20(beta)-diol, in maternal milk that inhibits glucuronide formation in vitro. *Journal of Clinical Investigation* 1964; 43:2037-47.	Test for different factors in human breastmilk
Azubuike JC. Neonatal jaundice in Eastern Nigeria. *Journal of Tropical Pediatrics* 1985; 31:(2)82-4.	Duplicate of Azubuike 1979
Bahl L, Sharma R, and Sharma J. Etiology of neonatal jaundice at Shimla. *Indian Pediatrics* 1994; 31:(10)1275-8.	Uncertainty over criteria for jaundice or hyperbilirubinaemia
Ballowitz L. Bilirubin encephalopathy: changing concepts. *Brain and Development* 1980; 2:(3)219-27.	Overview
Basu K, Das PK, Bhattacharya R *et al.* A new look on neonatal jaundice. *Journal of the Indian Medical Association* 2003; 100:(9)556-60.	Single test only
Beachy JM. Lab values. Investigating jaundice in the newborn. *Neonatal Network: The Journal of Neonatal Nursing* 2007; 26:(5)327-??	Overview
Behjati-Ardakani S, Nikkhah A, and Sedaghat M. The association between G6PD deficiency and total serum bilirubin level in icteric neonates. *Acta Medica Iranica* 2007; 45:(3)233-5.	Only tested for G-6-PD deficiency
Behjati-Ardakani S, Nikkhah A, Ashrafi MR *et al.* Association between total serum bilirubin level and manifestations of kernicterus. *Acta Medica Iranica* 2006; 44:(6)405-8.	Data on ABO/Rh incompatibility was not reported
Bender GJ, Cashore WJ, and Oh W. Ontogeny of bilirubin-binding capacity and the effect of clinical status in premature infants born at less than 1300 grams. *Pediatrics* 2007; 120:(5)1067-73.	Test not relevant to this guideline
Bernstein J, Braylan R, and Brough AJ. Bile-plug syndrome: a correctable cause of	Test not relevant to this guideline

obstructive jaundice in infants. *Pediatrics* 1969; 43:(2)273-6.	
Bertini G, Dani C, Pezzati M *et al.* Prevention of bilirubin encephalopathy. *Biology of the Neonate* 2001; 79:(3-4)219-4.	Overview
Bhutia RD, Upadhyay B, and Maneesh M. Association of plasma level of thiobarbituric acid reactive substances with extent of hepatocellular injury in preterm infants with cholestatic jaundice. *Indian Journal of Clinical Biochemistry* 2006; 21:(2)39-41.	Test was for Cholestasis
Bilgen H, Ozek E, Unver T *et al.* Urinary tract infection and hyperbilirubinemia. *Turkish Journal of Pediatrics* 2006; 48:(1)51-5.	Jaundice as a predictor for Urinary Tract Infections
Bilgen H. Urinary tract infection and neonatal hyperbilirubinemia. *Turkish Journal of Pediatrics* 2007; 49:(1)114.	Correspondence
Bonillo-Perales A, Munoz-Hoyos A, Martinez-Morales A *et al.* Changes in erythrocytic deformability and plasma viscosity in neonatal ictericia. *American Journal of Perinatology* 1999; 16:(8)421-7.	Comparison of babies with jaundice and without jaundice
Borgard JP, Szymanowicz A, Pellae I *et al.* Determination of total bilirubin in whole blood from neonates: results from a French multicenter study. *Clinical Chemistry and Laboratory Medicine* 2006; 44:(9)1103-10.	Comparison of different methods of bilirubin analysis
Botha MC, Rees J, Pritchard J *et al.* Glucose-6-phosphate dehydrogenase deficiency and neonatal jaundice among population groups of Cape Town. *South African Medical Journal* 1967; 41:(8)174-80.	Single test only
Bracci R, Buonocore G, Garosi G *et al.* Epidemiologic study of neonatal jaundice. A survey of contributing factors. *Acta Paediatrica Scandinavica, Supplement* 1989; 78:(360)87-92.	Not all babies were jaundiced
Bratlid D and Winsnes A. Comparison between different methods for determination of bile pigments in icteric serum samples. *Scandinavian Journal of Clinical and Laboratory Investigation* 1973; 31:(2)231-6.	Comparison of different methods of measuring bile acids
Bratlid D. Bilirubin toxicity: Pathophysiology and assessment of risk factors. *New York State Journal of Medicine* 1991; 91:(11)489-92.	Overview

Bratlid D. Reserve albumin binding capacity, salicylate saturation index, and red cell binding of bilirubin in neonatal jaundice. *Archives of Disease in Childhood* 1973; 48:(5)393-7.	Tests not relevant to this guideline
Brito MA, Silva R, Tiribelli C *et al.* Assessment of bilirubin toxicity to erythrocytes. Implication in neonatal jaundice management. *European Journal of Clinical Investigation* 2000; 30:(3)239-47.	Laboratory analysis of bilirubin toxicity on serum samples
Brito MA, Silva RFM, and Brites D. Bilirubin toxicity to human erythrocytes: A review. *Clinica Chimica Acta* 2006; 374:(1-2)46-2.	Overview
Brown AK. Hyperbilirubinemia in black infants. Role of glucose-6-phosphate dehydrogenase deficiency. *Clinical Pediatrics* 1992; 31:(12)712-5.	Overview
Brown WR and Boon WH. Hyperbilirubinemia and kernicterus in glucose-6-phosphate dehydrogenase-deficient infants in Singapore. *Pediatrics* 1968; 41:(6)1055-62.	Study examine incidence of jaundice in G-6-PD
Buonocore G, Berti D, Cito G *et al.* Moderately increased hemolysis in newborn infants with hyperbilirubinemia of unknown etiology. *Biology of the Neonate* 1983; 44:(4)251-6.	Results of G-6-PD tests not reported
Casado A, Casado C, Lopez-Fernandez E *et al.* Enzyme deficiencies in neonates with jaundice. *Panminerva Medica* 1995; 37:(4)175-7.	Babies were not tested for blood group incompatibility
Cashore WJ and Oh W. Unbound bilirubin and kernicterus in low-birth-weight infants. *Pediatrics* 1982; 69:(4)481-5.	Autopsy study on link between unbound bilirubin and kernicterus in low-birthweight babies
Cashore WJ, Oh W, Blumberg WE *et al.* Rapid fluorometric assay of bilirubin and bilirubin binding capacity in blood of jaundiced neonates: comparisons with other methods. *Pediatrics* 1980; 66:(3)411-6.	Laboratory evaluation of a new method for measuring bilirubin binding capacity
Chen SH, Chen LY, and Chen JS. Carboxyhemoglobin and serum hepatic enzymes in newborns with hyperbilirubinemia. *Taiwan i Hsueh Hui Tsa Chih - Journal of the Formosan Medical Association* 1986; 85:(2)101-8.	Babies with G-6-PD deficiency or blood group incompatibility were excluded
Chen SH. Endogenous formation of carbon monoxide in Chinese newborn with hyperbilirubinemia. *Taiwan i Hsueh Hui Tsa Chih - Journal of the Formosan Medical Association* 1981; 80:(1)68-77.	No test for G-6-PD deficiency

Chen WX, Wong VCN, and Wong KY. Neurodevelopmental outcome of severe neonatal hemolytic hyperbilirubinemia. *Journal of Child Neurology* 2006; 21:(6)474-9.	Babies with sepsis were excluded
Cisowska A, Tichaczek-Goska D, Szozda A *et al.* The bactericidal activity of complement in sera of children with infectious hyperbilirubinemia. *Advances in Clinical and Experimental Medicine* 2007; 16:(5)629-34.	Evaluation of bactericidal activity in blood – not relevant to this guideline
Coban AC, Can G, Kadioglu A *et al.* Adrenal hemorrhage: A rare cause of severe neonatal jaundice. *Pediatric Surgery International* 1994; 9:(1-2)123-??	Case study
Corchia C, Sanna MC, Serra C *et al.* 'Idiopathic' jaundice in Sardinian full-term newborn infants: a multivariate study. *Paediatric and Perinatal Epidemiology* 1993; 7:(1)55-66.	Babies with ABO/Rh incompatibility were excluded
Dani C, Martelli E, Bertini G *et al.* Plasma bilirubin level and oxidative stress in preterm infants. *Archives of Disease in Childhood Fetal and Neonatal Edition* 2003; 88:(2)F119-F123.	Tests not relevant to this guideline
Deshmukh VV and Sharma KD. Deficiency of erythrocyte G-6-PD as a cause of neonatal jaundice in India. *Indian Pediatrics* 1968; 5:(9)401-5.	Three case studies
Doxiadis SA, Karaklis A, Valaes T *et al.* Risk of severe jaundice in Glucose-6-Phosphate-Dehydrogenase deficiency of the newborn. Differences in population groups. *Lancet* 1964; 2:(7371)1210-2.	Not all babies tested for ABO incompatibility
Ebbesen F, Andersson C, Verder H *et al.* Extreme hyperbilirubinaemia in term and near-term infants in Denmark. *Acta Paediatrica* 2005; 94:(1)59-64.	Babies not tested for G-6-PD
Ebbesen F. Recurrence of kernicterus in term and near-term infants in Denmark. *Acta Paediatrica, International Journal of Paediatrics* 2000; 89:(10)1213-7.	Cases were not tested for G-6-PD deficiency
Emamghorashi F, Zendegani N, Rabiee S *et al.* Evaluation of urinary tract infection in newborns with jaundice in south of Iran. *Iranian Journal of Medical Sciences* 2008; 33:(1)17-21.	Jaundice as a predictor of UTI
Esbjorner E, Larsson P, Leissner P *et al.* The serum reserve albumin concentration for monoacetyldiaminodiphenyl sulphone and auditory evoked responses during neonatal hyperbilirubinaemia. *Acta Paediatrica Scandinavica* 1991; 80:(4)406-12.	Test not relevant to this guideline

Esbjorner E. Albumin binding properties in relation to bilirubin and albumin concentrations during the first week of life. *Acta Paediatrica Scandinavica* 1991; 80:(4)400-5.	Incomplete data
Eshaghpour E, Oski FA, and Williams M. The relationship of erythrocyte glucose-6-phosphate dehydrogenase deficiency to byperbilirubinemia in Negro premature infants. *Journal of Pediatrics* 1967; 70:(4)595-601.	Study on the impact of G-6-PD on exchange transfusion levels
Eslami Z and Sheikhha MH. Investigation of urinary tract infection in neonates with hyperbilirubinemia. *Journal of Medical Sciences* 2007; 7:(5)909-12.	Jaundice as a predictor for Urinary Tract Infections
Etzioni A, Shoshani G, Diamond E *et al.* Unconjugated hyperbilirubinaemia in hypertrophic pyloric stenosis, an enigma. *Zeitschrift fur Kinderchirurgie* 1986; 41:(5)272-4.	Not all subjects had jaundice
Fakhraee SH, Haji-Ebrahim-Tehrani F, Amid MH *et al.* Results of urine and blood cultures in healthy jaundiced newborns: Making the correct choice. *Archives of Iranian Medicine* 2002; 5:(2)88-90.	Tests for incidence of infections in babies with jaundice
Falcao AS, Fernandes A, Brito MA *et al.* Bilirubin-induced inflammatory response, glutamate release, and cell death in rat cortical astrocytes are enhanced in younger cells. *Neurobiology of Disease* 2005; 20:(2)199-206.	Animal test
Feld LG, Langford DJ, and Schwartz GJ. The effect of neonatal hyperbilirubinemia on the measurement of plasma creatinine. *Clinical Pediatrics* 1984; 23:(3)154-6.	Study on effect of jaundice on plasma creatinine
Feng CS, Wan CP, Lau J *et al.* Incidence of ABO haemolytic disease of the newborn in a group of Hong Kong babies with severe neonatal jaundice. *Journal of Paediatrics and Child Health* 1990; 26:(3)155-7.	Babies were only tested for ABO incompatibility
Finni K, Simila S, Koivisto M *et al.* Cholic acid, chenodeoxycholic acid, alpha-1-fetoprotein and alpha-1-antitrypsin serum concentrations in breast-fed infants with prolonged jaundice. *European Journal of Pediatrics* 1982; 138:(1)53-5.	Study for a single syndrome in prolonged jaundice
Finni K, Simila S, Koivisto M *et al.* Serum cholic acid and chenodeoxycholic acid concentrations in neonatal hyperbilirubinemia. *Biology of the Neonate* 1981; 40:(5-6)264-8.	Study for a single syndrome in prolonged jaundice

Fok TF, Lau SP, and Hui CW. Neonatal jaundice: its prevalence in Chinese babies and associating factors. *Australian Paediatric Journal* 1986; 22:(3)215-9.	Babies born by caesarean section were excluded
Francauai J, Myara A, Benattar C *et al.* Investigation of total and conjugated bilirubin determination during the neonatal period. *European Journal of Clinical Chemistry and Clinical Biochemistry* 1993; 31:(8)499-502.	Not all subjects had jaundice
Fretzayas A, Kitsiou S, Tsezou A *et al.* UGT1A1 promoter polymorphism as a predisposing factor of hyperbilirubinaemia in neonates with acute pyelonephritis. *Scandinavian Journal of Infectious Diseases* 2006; 38:(6-7)537.	Case studies
Funato M, Tamai H, Shimada S *et al.* Vigintiphobia, unbound bilirubin, and auditory brainstem responses. *Pediatrics* 1994; 93:(1)50-3.	Tests not relevant to this guideline
Furuhjelm U, Nevanlinna HR, and Osterlund K. Early neonatal jaundice and hyperbilirubinaemia and their relation to ABO incompatibility. *Acta Paediatrica Scandinavica* 1967; 56:(5)477-84.	Babies with Rh incompatibility were excluded
Garbagnati E and Manitto P. A new class of bilirubin photoderivatives obtained in vitro and their possible formation in jaundiced infants. *Journal of Pediatrics* 1973; 83:(1)109-15.	Study of laboratory processes
Garcia FJ and Nager AL. Jaundice as an early diagnostic sign of urinary tract infection in infancy. *Pediatrics* 2002; 109:(5)846-51.	Jaundice as a predictor of UTI
Ghaemi S, Fesharaki RJ, and Kelishadi R. Late onset jaundice and urinary tract infection in neonates. *Indian Journal of Pediatrics* 2007; 74:(2)139-41.	Rates of urinary tract infections in late-onset jaundice
Gibbs WN, Gray R, and Lowry M. Glucose-6-phosphate dehydrogenase deficiency and neonatal jaundice in Jamaica. *British Journal of Haematology* 1979; 43:(2)263-74.	Babies with biliary obstruction were excluded
Gloria-Bottini F, Orzalesi M, Coccia M *et al.* Neonatal jaundice in ABO incompatible infants. Computer-assisted evaluation of risk of hyperbilirubinaemia and analysis of differences between sexes. *Computers and Biomedical Research* 1981; 14:(1)31-40.	Not tested for G-6-PD deficiency
Go JMR, Cocjin A, and Dee-Chan R. Jaundice as an early diagnostic sign of urinary tract infection in infants less than 8 weeks of age. *Santo Tomas Journal of Medicine* 2005; 52:(4)131-9.	Jaundice as a predictor of UTI

Goldberg PK, Kozinn PJ, Kodsi B *et al.* Endotoxemia and hyperbilirubinemia in the neonate. *American Journal of Diseases of Children* 1982; 136:(9)845-8.	Test not relevant to this guideline
Gotlieb A, Nir I, and Pesach J. Urinary excretion of free and conjugated glucuronic acid in jaundiced newborn. *Acta Paediatrica Scandinavica* 1971; 60:(4)437-40.	Tests not relevant to this guideline
Haimi-Cohen Y, Merlob P, Davidovitz M *et al.* Renal function in full-term neonates with hyperbilirubinemia. *Journal of Perinatology* 1997; 17:(3)225-7.	Effect of hyperbilirubinaemia on renal function
Hanka¸ E. Unbound bilirubin and risk assessment in the jaundiced newborn: possibilities and limitations. *Pediatrics* 2006; 117:(2)526-7.	Commentary
Hanko E. Unbound bilirubin and risk assessment in the jaundiced newborn: possibilities and limitations. *Pediatrics* 2006; 117:(2)526-7.	Commentary
Hargrove MD, Jr. and Van Sanders C. Extreme elevation in total serum bilirubin: a study of the causes in 32 consecutive cases. *Southern Medical Journal* 1971; 64:(2)213-7.	Subjects were adults with jaundice
Hawkins B. Immuno-serological studies of neonatal jaundice. *Journal of the Singapore Paediatric Society* 1972; 14:(2)101-6.	Babies were not tested for G-6-PD
Henriksen NT, Drablos PA, and Aagenaes O. Cholestatic jaundice in infancy. The importance of familial and genetic factors in aetiology and prognosis. *Archives of Disease in Childhood* 1981; 56:(8)622-7.	Examination of cholestatic jaundice
Herschel M, Karrison T, Wen M *et al.* Isoimmunization is unlikely to be the cause of hemolysis in ABO-incompatible but direct antiglobulin test-negative neonates. *Pediatrics* 2002; 110:(1 I)127-30.	Not all babies were not jaundiced
Hitch DC, Leonard JC, Pysher TJ *et al.* Differentiation of cholestatic jaundice in infants. Utility of diethyl-IDA. *American Journal of Surgery* 1981; 142:(6)671-7.	Diagnosis of biliary atresia
Hon AT, Balakrishnan S, and Ahmad Z. Hyperbilirubinaemia and erythrocytic glucose 6 phosphate dehydrogenase deficiency in Malaysian children. *Medical Journal of Malaysia* 1989; 44:(1)30-4.	Only babies with G-6-PD deficiency tested
Howorth PJ. Determination of serum albumin in neonatal jaundice. The albumin	Comparison of two methods to measure serum albumin

saturation index. *Clinica Chimica Acta* 1971; 32:(2)271-8.	
Huang A, Tai BC, Wong LY *et al.* Differential risk for early breastfeeding jaundice in a multi-ethnic asian cohort. *Annals of the Academy of Medicine Singapore* 2009; 38:(3)217-24.	Babies less than 2500 grams were excluded
Husain S and Pohowalla JN. Serum iron levels in jaundice in infancy and childhood. *Journal of the Indian Medical Association* 1969; 53:(5)237-40.	Test not relevant to this guideline
Hwang KC, Hsieh KH, and Chen JH. Immunological studies of newborn infants with hyperbilirubinemia. *Chinese Journal of Microbiology and Immunology* 1981; 14:(2)1-7.	Tests not relevant to this guideline
Jalloh S, Van RH, Yusoff NM *et al.* Poor correlation between hemolysis and jaundice in glucose 6-phosphate dehydrogenase-deficient babies. *Pediatrics International* 2005; 47:(3)258-61.	Incomplete data – number with blood group incompatibility were not reported
Jangaard KA, Fell DB, Dodds L *et al.* Outcomes in a population of healthy term and near-term infants with serum bilirubin levels of >or=325 micromol/L (>or=19 mg/dL) who were born in Nova Scotia, Canada, between 1994 and 2000. *Pediatrics* 2008; 122:(1)119-24.	Adverse effects of severe hyperbilirubinaemia
Javitt NB. Hyperbilirubinemic and cholestatic syndromes. New concepts aiding recognition and management. *Postgraduate Medicine* 1979; 65:(1)120-4.	Overview
Kaapa P. Immunoreactive thromboxane B2 and 6-keto-prostaglandin F1 alpha in neonatal hyperbilirubinemia. *Prostaglandins Leukotrienes and Medicine* 1985; 17:(1)97-105.	Only babies with idiopathic jaundice were included
Kaini NR, Chaudhary D, Adhikary V *et al.* Overview of cases and prevalence of jaundice in neonatal intensive care unit. *Nepal Medical College Journal: NMCJ* 2006; 8:(2)133-5.	Not test for G-6-PD deficiency
Kaplan M and Hammerman C. Understanding severe hyperbilirubinemia and preventing kernicterus: adjuncts in the interpretation of neonatal serum bilirubin. *Clinica Chimica Acta* 2005; 356:(1-2)9-21.	Overview
Kaplan M, Algur N, and Hammerman C. Onset of jaundice in glucose-6-phosphate dehydrogenase-deficient neonates. *Pediatrics* 2001; 108:(4)956-9.	Babies with blood group incompatibility were excluded

Kaplan M, Beutler E, Vreman HJ *et al.* Neonatal hyperbilirubinemia in glucose-6-phosphate dehydrogenase-deficient heterozygotes. *Pediatrics* 1999; 104:(1 Pt 1)68-74.	Babies with a positive Coombs' text were excluded
Kaplan M, Rubaltelli FF, Hammerman C *et al.* Conjugated bilirubin in neonates with glucose-6-phosphate dehydrogenase deficiency. *Journal of Pediatrics* 1996; 128:(5 I)695-7.	Only babies with G-6-PD deficiency tested
Kavukcu S, Turkmen M, Polat M *et al.* Urinary enzyme changes in newborns with unconjugated hyperbilirubinemia. *Acta Paediatrica Japonica* 1997; 39:(Overseas Edition)-204.	Effect of hyperbilirubinaemia on renal function
Kedar PS, Warang P, Colah RB *et al.* Red cell pyruvate kinase deficiency in neonatal jaundice cases in India. *Indian Journal of Pediatrics* 2006; 73:(11)985-8.	Test not relevant to this guideline
Keenan WJ, Arnold JE, and Sutherland JM. Serum bilirubin binding determined by sephadex column chromatography. *Journal of Pediatrics* 1969; 74:(5)813.	Conference abstract
Kilic M, Turgut M, Taskin E *et al.* Nitric oxide levels and antioxidant enzyme activities in jaundices of premature infants. *Cell Biochemistry and Function* 2004; 22:(5)339-42.	Babies with ABO or Rh incompatibility were excluded
Kirk JM. Neonatal jaundice: a critical review of the role and practice of bilirubin analysis. *Annals of Clinical Biochemistry* 2008; 45:(Pt 5)452-62.	Overview
Knudsen A. The influence of the reserve albumin concentration and pH on the cephalocaudal progression of jaundice in newborns. *Early Human Development* 1991; 25:(1)37-41.	Babies were not pre-selected for jaundice
Kulkarni SV, Merchant RH, Gupte SC *et al.* Clinical significance of serum and cerebro spinal fluid bilirubin indices in neonatal jaundice. *Indian Pediatrics* 1989; 26:(12)1202-8.	Test (cerebro-spinal fluid bilirubin) not relevant to this guideline
Kumar A, Pant P, Basu S *et al.* Oxidative stress in neonatal hyperbilirubinemia. *Journal of Tropical Pediatrics* 2007; 53:(1)69-71.	Test not relevant to this guideline
Kumral A, Genc S, Genc K *et al.* Hyperbilirubinemic serum is cytotoxic and induces apoptosis in murine astrocytes. *Biology of the Neonate* 2005; 87:(2)99-104.	Study examining the effect of hyperbilirubinaemic serum on murine astrocytees

Lai HC, Lai MP, and Leung KS. Glucose-6-phosphate dehydrogenase deficiency in Chinese. *Journal of Clinical Pathology* 1968; 21:(1)44-7.	Only tested for G-6-PD
Lee HC, Fang SB, Yeung CY *et al.* Urinary tract infections in infants: comparison between those with conjugated vs unconjugated hyperbilirubinaemia. *Annals of Tropical Paediatrics* 2005; 25:(4)277-82.	Comparison of urinary tract infection rates in conjugated and unconjugated hyperbilirubinaemia
Lee KS and Gartner LM. Management of unconjugated hyperbilirubinemia in the newborn. *Seminars in Liver Disease* 1983; 3:(1)52-64.	Overview
Lee WS, McKiernan PJ, Beath SV *et al.* Bile bilirubin pigment analysis in disorders of bilirubin metabolism in early infancy. *Archives of Disease in Childhood* 2001; 85:(1)38-42.	Study for a single syndrome in prolonged jaundice
Leung AK. Screening of jaundiced neonates for glucose-6-phosphate dehydrogenase deficiency. *Southern Medical Journal* 1987; 80:(2)217-8.	Babies were not tested for blood group incompatibility
Lie-Injo LE, Virik HK, Lim PW *et al.* Red cell metabolism and severe neonatal jaundice in West Malaysia. *Acta Haematologica* 1977; 58:(3)152-60.	Babies with isoimmunization were excluded
Lin M, Shieh SH, Hwang FY *et al.* The Le(a) antigen and neonatal hyperbilirubinemia in Taiwan. *Vox Sanguinis* 1995; 69:(2)131-4.	Babies with blood group incompatibility or G-6-PD were excluded
Linder N, Yatsiv I, Tsur M *et al.* Unexplained neonatal jaundice as an early diagnostic sign of septicemia in the newborn. *Journal of Perinatology* 1988; 8:(4)325-7.	Test not relevant to guideline
MacKinlay GA. Jaundice persisting beyond 14 days after birth. *British Medical Journal* 1993; 306:(6890)1426-7.	Overview
Madan N and Sood SK. Role of G6PD, ABO incompatibility, low birth weight and infection in neonatal hyperbilirubinaemia. *Tropical and Geographical Medicine* 1987; 39:(2)163-8.	Babies with Rh incompatibility were excluded
Madan N, Sundaram KR, Bhargava SK *et al.* Glucose-6-phosphate dehydrogenase deficiency and neonatal hyperbilirubinaemia. *Indian Journal of Medical Research* 1989; 90:306-13.	Babies were not tested for blood group incompatibility
Maisels MJ and Kring E. Risk of sepsis in newborns with severe hyperbilirubinemia.	Babies were not tested for G-6-PD deficiency

Pediatrics 1992; 90:(5)741-3.	
Maisels MJ, Newman TB, Garcia FJ *et al.* Neonatal Jaundice and Urinary Tract Infections. *Pediatrics* 2003; 112:(5)1213-4.	Correspondence
Martin TC, Shea M, Alexander D *et al.* Did exclusive breast-feeding and early discharge lead to excessive bilirubin levels in newborns in Antigua and Barbuda? *West Indian Medical Journal* 2002; 51:(2)84-8.	Babies were not tested for G-6-PD
Maruo Y, Nishizawa K, Sato H *et al.* Association of neonatal hyperbilirubinemia with bilirubin UDP- glucuronosyltransferase polymorphism. *Pediatrics* 1999; 103:(6 I)1224-7.	Genetic test not relevant to this guideline
Maruo Y, Nishizawa K, Sato H *et al.* Prolonged unconjugated hyperbilirubinemia associated with breast milk and mutations of the bilirubin uridine diphosphate-glucuronosyltransferase gene. *Pediatrics* 2000; 106:(5)E59.	A single genetic test
Marwaha N, Sarode R, Marwaha RK *et al.* Bilirubin crystals in peripheral blood smears from neonates with unconjugated hyperbilirubinaemia. *Medical Laboratory Sciences* 1990; 47:(4)278-81.	Test already routinely done
McClean P. Recognizing liver disease in jaundiced infants. *British Journal of Midwifery* 2008; 16:(2)106-9.	Overview
McCulloch JC. Red cell potassium levels in neonatal jaundice --a preliminary study. *Medical Laboratory Sciences* 1977; 34:(2)115-22.	Not tested for blood group incompatibility
McDonagh AF. Ex uno plures: The concealed complexity of bilirubin species in neonatal blood samples. *Pediatrics* 2006; 118:(3)1185-7.	Review
McKiernan PJ. Neonatal cholestasis. *Seminars in Neonatology* 2002; 7:(2)153-65.	Overview
McKiernan PJ. The infant with prolonged jaundice: Investigation and management. *Current Paediatrics* 2001; 11:(2)83-9.	Overview
Meisel P, Jahrig D, Beyersdorff E *et al.* Bilirubin binding and acid-base equilibrium in newborn infants with low birthweight. *Acta Paediatrica Scandinavica* 1988; 77:(4)496-501.	Effect of acid-base on bilirubin-albumin binding

Meyers RL, Book LS, O'Gorman MA *et al.* Percutaneous Cholecysto-Cholangiography in the Diagnosis of Obstructive Jaundice in Infants. *Journal of Pediatric Surgery* 2004; 39:(1)16-8.	Tests not relevant to this quideline
Monaghan G, McLellan A, McGeehan A *et al.* Gilbert's syndrome is a contributory factor in prolonged unconjugated hyperbilirubinemia of the newborn. *Journal of Pediatrics* 1999; 134:(4)441-6.	Test for a single syndrome in prolonged jaundice
Moyer V, Freese DK, Whitington PF *et al.* Guideline for the evaluation of cholestatic jaundice in infants: recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. *Journal of Pediatric Gastroenterology and Nutrition* 2004; 39:(2)115-28.	Guideline for Cholestatic jaundice
Muslu N, Dogruer ZN, Eskandari G *et al.* Are glutathione S-transferase gene polymorphisms linked to neonatal jaundice? *European Journal of Pediatrics* 2008; 167:(1)57-61.	Tests not relevant to this guideline
Muslu N, Turhan AB, Eskandari G *et al.* The frequency of UDP-glucuronosyltransferase 1 A1 promoter region (TA)7 polymorphism in newborns and it's relation with jaundice. *Journal of Tropical Pediatrics* 2007; 53:(1)64-8.	Correspondence
Nair RR, Murty JS, Rao MN *et al.* ABO incompatibility and neonatal jaundice. *Indian Journal of Medical Research* 1980; 71:567-75.	Babies were not tested for G-6-PD
Nakamura H, Lee Y, and Takemoto H. Effects of photo-irradiation on bilirubin binding affinity of icteric sera. *Kobe Journal of Medical Sciences* 1981; 27:(2)59-69.	Effects of phototherapy on total and unbound bilirubin
Nakamura H, Takada S, Shimabuku R *et al.* Auditory nerve and brainstem responses in newborn infants with hyperbilirubinemia. *Pediatrics* 1985; 75:(4)703-8.	Study of auditory brainstem responses
Nakamura H, Yonetani M, Uetani Y *et al.* Determination of serum unbound bilirubin for prediction of kernicterus in low birthweight infants. *Acta Paediatrica Japonica* 1992; 34:(6)642-7.	Predictive accuracy of two bilirubin levels for predicting kernicterus
Nelson BT. Jaundice survey: Grenada, West Indies. *International Pediatrics* 1998; 13:(3)150-4.	Only 1 in 4 babies were tested for G-6-PD
Newman TB and Easterling MJ. Yield of reticulocyte counts and blood smears in term	No tests for G-6-PD

infants. *Clinical Pediatrics* 1994; 33:(2)71-6.	
Newman TB and Maisels MJ. Evaluation and treatment of jaundice in the term newborn: a kinder, gentler approach. *Pediatrics* 1992; 89:(5 Pt 1)809-18.	Overview
Newman TB, Liljestrand P, and Escobar GJ. Infants with bilirubin levels of 30 mg/dL or more in a large managed care organization. *Pediatrics* 2003; 111:(6 I)1303-11.	G-6-PD test not carried out on all babies
Newman TB, Liljestrand P, Jeremy RJ *et al.* Outcomes among newborns with total serum bilirubin levels of 25 mg per deciliter or more. *New England Journal of Medicine* 2006; 354:(18)1889-900.	Not all babies tested
Nong SH, Xie YM, Chan KW *et al.* Severe hyperbilirubinaemia in a Chinese girl with type I Crigler-Najjar syndrome: First case ever reported in Mainland China. *Journal of Paediatrics and Child Health* 2005; 41:(5-6)300-6.	Case study
Nowicki MJ and Poley JR. The hereditary hyperbilirubinaemias. *Bailliere's Clinical Gastroenterology* 1998; 12:(2)355-67.	Overview
Odell GB, Cohen SN, and Kelly PC. Studies in kernicterus. II. The determination of the saturation of serum albumin with bilirubin. *Journal of Pediatrics* 1969; 74:(2)214-30.	Test not relevant to this guideline
Odell GB, Storey GN, and Rosenberg LA. Studies in kernicterus. 3. The saturation of serum proteins with bilirubin during neonatal life and its relationship to brain damage at five years. *Journal of Pediatrics* 1970; 76:(1)12-21.	Test not relevant to this guideline
Odell GB. Neonatal jaundice. *Progress in Liver Diseases* 1976; 5:457-75.	Overview – background information only
Ogita S, Shimamoto T, Ohnishi M *et al.* Hemolytic pattern of erythrocytes in the newborn measured by the coil planet centrifuge system and its relationship to neonatal jaundice. *European Journal of Pediatrics* 1978; 127:(2)67-73.	Laboratory tests
Oktay R, Satar M, and Atici A. The risk of bilirubin encephalopathy in neonatal hyperbilirubinemia. *Turkish Journal of Pediatrics* 1996; 38:(2)199-204.	Link between free bilirubin and bilirubin encephalopathy
Okumus N, Turkyilmaz C, Onal EE *et al.* Tau and S100B proteins as biochemical markers of bilirubin-induced neurotoxicity in term neonates. *Pediatric Neurology* 2008; 39:(4)245-52.	Babies with sepsis were excluded

Olah VA, Csathy L, and Karmazsin L. Erythrocyte damage in newborn babies caused by hyperbilirubinaemia and hypoxia. *Acta Paediatrica Hungarica* 1991; 31:(3)357-64.	Tests not relevant to this guideline
Ostrea EM, Jr., Bassel M, Fleury CA *et al.* Influence of free fatty acids and glucose infusion on serum bilirubin and bilirubin binding to albumin: clinical implications. *Journal of Pediatrics* 1983; 102:(3)426-32.	Study of the saturation index – test not relevant to this guideline
Ostrea EM, Jr., Ongtengco EA, Tolia VA *et al.* The occurrence and significance of the bilirubin species, including delta bilirubin, in jaundiced infants. *Journal of Pediatric Gastroenterology and Nutrition* 1988; 7:(4)511-6.	Tests not relevant to this guideline
Ostrow JD. Photochemical and biochemical basis of the treatment of neonatal jaundice. *Progress in Liver Diseases* 1972; 4:447-62.	Overview
Ou CN, Buffone GJ, Herr-Calomeni PJ *et al.* Unconjugated hyperbilirubinemia is overestimated in neonates with cholestasis. A more reliable method is proposed. *American Journal of Clinical Pathology* 1985; 84:(6)752-6.	Not all subjects were newborn
Owa JA and Dawodu AH. Neonatal jaundice among Nigerian preterm infants. *East African Medical Journal* 1988; 65:(8)552-6.	Only pre-term babies were included
Owa JA and Dawodu AH. Neonatal jaundice among Nigerian preterm infants. *West African Journal of Medicine* 1990; 9:(4)252-7.	Only pre-term babies were included
Owa JA, Durosinmi MA, and Alabi AO. Determinants of severity of neonatal hyperbilirubinaemia in ABO incompatibility in Nigeria. *Tropical Doctor* 1991; 21:(1)19-22.	Study only included babies with ABO incompatibility
Palmer DC and Drew JH. Jaundice: a 10 year review of 41,000 live born infants. *Australian Paediatric Journal* 1983; 19:(2)86-9.	Study was superseded by a 15 year analysis of this data
Pashapour N, Nikibahksh AA, and Golmohammadlou S. Urinary tract infection in term neonates with prolonged jaundice. *Urology Journal* 2007; 4:(2)91-4.	Babies were only tested for urinary tract infections
Pays M and Beljean M. Microdetermination of unbound bilirubin. Application to the prevention of kernicterus by estimation of the serum bilirubin binding capacity in neonatal hyperbilirubinemia. *Zeitschrift fur Klinische Chemie und Klinische Biochemie* 1974; 12:(5)250-1.	Conference abstract

Penberthy L, St JA, and Blake G. Bilirubin analyses in neonatal jaundice. *Medical Journal of Australia* 1978; 1:(12)659.	Correspondence
Polacek K. Risk of kernicterus in newborn infants with a high level of conjugated bilirubin. *Acta Paediatrica Scandinavica* 1966; 55:(4)401-4.	Only babies with conjugated hyperbilirubinaemia were included
Priolisi A and Ziino L. Comparative analysis between the reserve albumin-binding capacity (HBABA method) and the saturation index of hyperbilirubinemic sera. *Biology of the Neonate* 1971; 19:(4)258-71.	Tests not relevant to guideline
Priolisi A. Clinical experience with Sephadex gel filtration for the estimation of non-albumin bound bilirubin in sera of jaundiced infants. *Birth Defects: Original Article Series* 1976; 12:(2)245-54.	No test for G-6-PD
Rastogi D and Rastogi S. Neonatal hyperbilirubinemia in healthy breast-fed newborn: Assessment at discharge. *Emergency and Office Pediatrics* 1999; 12:(3)100-2.	Case study
Ratnavel N and Ives NK. Investigation of prolonged neonatal jaundice. *Current Paediatrics* 2005; 15:(2)85-91.	Overview
Rehman H, Khan MA, Hameed A *et al.* Erythrocyte glucose 6 phosphate dehydrogenase deficiency and neonatal jaundice. *JPMA - Journal of the Pakistan Medical Association* 1995; 45:(10)259-60.	Incomplete data – numbers with blood group incompatibility not given
Reiser DJ. Neonatal jaundice: physiologic variation or pathologic process. *Critical Care Nursing Clinics of North America* 2004; 16:(2)257-69.	Overview
Ritter DA, Kenny JD, Norton HJ *et al.* A prospective study of free bilirubin and other risk factors in the development of kernicterus in premature infants. *Pediatrics* 1982; 69:(3)260-6.	Not all babies who died had an autopsy
Rolinski B, Kuster H, Ugele B *et al.* Total bilirubin measurement by photometry on a blood gas analyzer: potential for use in neonatal testing at the point of care. *Clinical Chemistry* 2001; 47:(10)1845-7.	Comparison of methods to measure serum bilirubin
Roux P, Karabus CD, and Hartley PS. The effect of glucose-6-phosphate dehydrogenase deficiency on the severity of neonatal jaundice in Cape Town. *South African Medical Journal* 1982; 61:(21)781-2.	Babies with blood group incompatibility were excluded

Sansone G, Perroni L, and Yoshida A. Glucose-6-phosphate dehydrogenase variants from Italian subjects associated with severe neonatal jaundice. *British Journal of Haematology* 1975; 31:(2)159-65.	Three cases studies
Sarici SU, Serdar MA, Erdem G *et al.* Evaluation of plasma ionized magnesium levels in neonatal hyperbilirubinemia. *Pediatric Research* 2004; 55:(2)243-7.	Babies with ABO/Rh incompatibility or G-6-PD deficiency were excluded
Sarma DK, Shukla R, Lodha A *et al.* Neonatal screening for glucose-6-phosphate dehydrogenase (G6PD) deficiency: Experience in a private hospital. *Emirates Medical Journal* 2006; 24:(3)211-4.	Babies only tested for G-6-PD deficiency
Sasanakul W, Hathirat P, Jeraporn K *et al.* Neonatal jaundice and glucose-6-phosphate dehydrogenase deficiency. *Journal of the Medical Association of Thailand* 1989; 72 Suppl 1:130-2.	Babies were not tested for blood group incompatibility
Satar M, Atici A, and Oktay R. The influence of clinical status on total bilirubin binding capacity in newborn infants. *Journal of Tropical Pediatrics* 1996; 42:(1)43-5.	Test not relevant to this guideline – bilirubin binding capacity
Scheidt PC, Graubard BI, Nelson KB *et al.* Intelligence at six years in relation to neonatal bilirubin levels: follow-up of the National Institute of Child Health and Human Development Clinical Trial of Phototherapy. *Pediatrics* 1991; 87:(6)797-805.	Long term outcomes from an included RCT
Schiff D, Chan G, and Stern L. Proceedings: Clinical implications of bilirubin-albumin binding in the newborn. *Revue Canadienne de Biologie* 1973; 32:(Suppl)-8.	Comparison of two test to measure bilirubin-albumin binding
Settin A, Al-Haggar M, Al-Baz R *et al.* Screening for G6PD Mediterranean mutation among Egyptian neonates with high or prolonged jaundice. *HAEMA* 2006; 9:(1)81-8.	Single test only
Shenoi UD and Nandi GK. Bilirubin crystals in neutrophils in neonatal hyperbilirubinaemia. *Indian Journal of Pediatrics* 1997; 64:(1)93-6.	Tests not relevant to this guideline
Siklar Z, Tezer H, Dallar Y *et al.* Borderline congenital hypothyroidism in the neonatal period. *Journal of Pediatric Endocrinology* 2002; 15:(6)817-21.	Test not relevant to guideline
Singh B, Ezhilarasan R, Kumar P *et al.* Neonatal hyperbilirubinemia and its association with thyroid hormone levels and urinary iodine excretion. *Indian Journal of Pediatrics* 2003; 70:(4)311-5.	Tests not relevant to this guideline

Slusher TM, Vreman HJ, McLaren DW *et al.* Glucose-6-phosphate dehydrogenase deficiency and carboxyhemoglobin concentrations associated with bilirubin-related morbidity and death in Nigerian infants. *Journal of Pediatrics* 1995; 126:(1)102-8.	Babies were not tested for ABO incompatibility
Spear ML, Stahl GE, Hamosh M *et al.* Effect of heparin dose and infusion rate on lipid clearance and bilirubin binding in premature infants receiving intravenous fat emulsions. *Journal of Pediatrics* 1988; 112:(1)94-8.	Not all babies were jaundiced
Tateno M. Relationship between the serum transaminase activities and the serum bilirubin concentration in the icterus neonatorum. *Acta Obstetrica et Gynaecologica Japonica* 1970; 17:(4)239-44.	Tests not relevant to this guideline
Tazawa Y and Konno T. Urinary monohydroxy bile acids in young infants with obstructive jaundice. *Acta Paediatrica Scandinavica* 1982; 71:(1)91-5.	Not all subjects newborn
Tazawa Y, Abukawa D, Watabe M *et al.* Abnormal results of biochemical liver function tests in breast-fed infants with prolonged indirect hyperbilirubinaemia. *European Journal of Pediatrics* 1991; 150:(5)310-3.	Study for a single syndrome in prolonged jaundice
Tazawa Y, Yamada M, Nakagawa M *et al.* Serum bile acids and their conjugates in breast-fed infants with prolonged jaundice. *European Journal of Pediatrics* 1985; 144:(1)37-40.	Test for a single disease
Thaler MM. Jaundice in the newborn. Algorithmic diagnosis of conjugated and unconjugated hyperbilirubinemia. *JAMA: the journal of the American Medical Association* 1977; 237:(1)58-62.	Overview
Tiker F, Gurakan B, and Tarcan A. Relationship between serum bilirubin and coagulation test results in 1-month-old infants. *Indian Journal of Pediatrics* 2005; 72:(3)205-7.	Test not relevant to this guideline
Turgut M, Basaran O, Cekmen M *et al.* Oxidant and antioxidant levels in preterm newborns with idiopathic hyperbilirubinaemia. *Journal of Paediatrics and Child Health* 2004; 40:(11)633-7.	Babies with ABO or Rh incompatibility were excluded
Uetani Y, Nakamura H, Okamoto O *et al.* Carboxyhemoglobin measurements in the diagnosis of ABO hemolytic disease. *Acta Paediatrica Japonica* 1989; 31:171-6.	Test not relevant to this guideline

Ullrich D, Fevery J, Sieg A *et al.* The influence of gestational age on bilirubin conjugation in newborns. *European Journal of Clinical Investigation* 1991; 21:(1)83-9.	Babies with hepatic diseases were excluded
Vaca G, Ibarra B, Hernandez A *et al.* Glucose-6-phosphate dehydrogenase deficiency and abnormal hemoglobins in mexican newborns with jaundice. *Revista de Investigacion Clinica* 1981; 33:(3)259-61.	Unclear if all babies were tested for blood group incompatibility
Vos GH, Adhikari M, and Coovadia HM. A study of ABO incompatibility and neonatal jaundice in Black South African newborn infants. *Transfusion* 1981; 21:(6)744-9.	Babies were not tested for G-6-PD
Voutetakis A, Maniati-Christidi M, Kanaka-Gantenbein C *et al.* Prolonged jaundice and hypothyroidism as the presenting symptoms in a neonate with a novel Prop1 gene mutation (Q83X). *European Journal of Endocrinology* 2004; 150:(3)257-64.	Case study
Weiss JS, Gautam A, Lauff JJ *et al.* The clinical importance of a protein-bound fraction of serum bilirubin in patients with hyperbilirubinemia. *New England Journal of Medicine* 1983; 309:(3)147-50.	Not all subjects had jaundice
Wennberg R. Unbound bilirubin: a better predictor of kernicterus? *Clinical Chemistry* 2008; 54:(1)207-8.	Opinion piece
Wolf MJ, Beunen G, Casaer P *et al.* Extreme hyperbilirubinaemia in Zimbabwean neonates: neurodevelopmental outcome at 4 months. *European Journal of Pediatrics* 1997; 156:(10)803-7.	Babies were not tested for G-6-PD
Wolf MJ, Beunen G, Casaer P *et al.* Neurological status in severely jaundiced Zimbabwean neonates. *Journal of Tropical Pediatrics* 1998; 44:(3)161-4.	Babies were not tested for G-6-PD
Wolf MJ, Wolf B, Beunen G *et al.* Neurodevelopmental outcome at 1 year in Zimbabwean neonates with extreme hyperbilirubinaemia. *European Journal of Pediatrics* 1999; 158:(2)111-4.	Babies were not tested for G-6-PD
Wolff JA, Grossman BH, and Paya K. Neonatal serum bilirubin and glucose-6-phosphate dehydrogenase. Relationship of various perinatal factors to hyperbilirubinemia. *American Journal of Diseases of Children* 1967; 113:(2)251-4.	Babies were not tested for blood group incompatibility
Woodfield DG and Biddulph J. Neonatal jaundice and glucose-6-phosphate dehydrogenase deficiency in Papua New Guinea. *Medical Journal of Australia* 1975;	Follow-up of an included study

1:(14)443-6.	
Yamada M, Tazawa Y, Nakagawa M *et al.* Alterations of serum bile acid profile in breast-fed infants with prolonged jaundice. *Journal of Pediatric Gastroenterology and Nutrition* 1985; 4:(5)741-5.	Effect of prolonged jaundice on serum bile acid profile
Yamauchi Y and Yamanouchi I. Transcutaneous bilirubinometry: Bilirubin kinetics of the skin and serum during and after phototherapy. *Biology of the Neonate* 1989; 56:(5)263-9.	No test for G-6-PD
Yen HJ, Chen SJ, Soong WJ *et al.* Analysis of test of hemolytic disease in newborn with neonatal hyperbilirubinemia. *Clinical Neonatology* 2005; 12:(1)1-5.	Study compared babies with haemolytic disease of the newborn with controls
Yu MW, Hsiao KJ, Wuu KD *et al.* Association between glucose-6-phosphate dehydrogenase deficiency and neonatal jaundice: interaction with multiple risk factors. *International Journal of Epidemiology* 1992; 21:(5)947-52.	Not all babies tested for blood group incompatibility
Yurdakok M and Yilmazoglu G. Gamma-glutamyl transferase in neonatal non-hemolytic indirect hyperbilirubinemia. *Turkish Journal of Pediatrics* 1990; 32:(1)21-3.	Test not relevant to this guideline

Q6. Phototherapy

Reference	Reason for exclusion
Amato M, Howald H, and von MG. Interruption of breast-feeding versus phototherapy as treatment of hyperbilirubinemia in full-term infants. *Helvetica Paediatrica Acta* 1985; 40:(2-3)127-31.	Not all babies received phototherapy
Boo NY and Chew EL. A randomised control trial of clingfilm for prevention of hypothermia in term infants during phototherapy. *Singapore Medical Journal* 2006; 47:(9)757-62.	Intervention to prevent hypothermia
Boo NY, Chee SC, and Rohana J. Randomized controlled study of the effects of different durations of light exposure on weight gain by preterm infants in a neonatal intensive care unit. *Acta Paediatrica* 2002; 91:(6)674-9.	No jaundice-related outcomes
Brown AK, Kim MH, Wu PY *et al.* Efficacy of phototherapy in prevention and management of neonatal hyperbilirubinemia. *Pediatrics* 1985; 75:(2 Pt 2)393-400.	Secondary publication of NICHHD study
Bryla DA. Randomized, controlled trial of phototherapy for neonatal hyperbilirubinemia. Development, design, and sample composition. *Pediatrics* 1985; 75:(2 Pt 2)387-92.	Secondary publication of NICHHD study
Costarino AT, Ennever JF, Baumgart S *et al.* Bilirubin photoisomerization in premature neonates under low- and high-dose phototherapy. *Pediatrics* 1985; 75:(3)519-22.	Not an RCT
Costarino AT, Jr., Ennever JF, Baumgart S *et al.* Effect of spectral distribution on isomerization of bilirubin in vivo. *Journal of Pediatrics* 1985; 107:(1)125-8.	Not an RCT
Donzelli GP, Moroni M, Pratesi S *et al.* Fibreoptic phototherapy in the management of jaundice in low birthweight neonates. *Acta Paediatrica* 1996; 85:(3)366-70.	Not an RCT
Eggert LD, Pollary RA, Folland DS *et al.* Home phototherapy treatment of neonatal jaundice. *Pediatrics* 1985; 76:(4)579-84.	Home phototherapy not relevant to this guideline

Elliott E, Moncrieff MW, and George WH. Phototherapy for hyperbilirubinaemia in low birthweight infants. *Archives of Disease in Childhood* 1974; 49:(1)60-2.	Not an RCT
Ennever JF, Knox I, and Speck WT. Differences in bilirubin isomer composition in infants treated with green and white light phototherapy. *Journal of Pediatrics* 1986; 109:(1)119-22.	Not an RCT
Fiberoptic phototherapy systems. *Health Devices* 1995; 24:(4)132-53.	Not an RCT
Finlay HVL and Tucker SM. Neonatal plasma bilirubin chart. *Archives of Disease in Childhood* 2009; 53:(1)90.	Background information
Fuller J. Home phototherapy. *Caring* 1990; 9:(12)8-11.	Home phototherapy not relevant to this guideline
Garg AK, Prasad RS, and Hifzi IA. A controlled trial of high-intensity double-surface phototherapy on a fluid bed versus conventional phototherapy in neonatal jaundice. *Pediatrics* 1995; 95:(6)914-6.	Not an RCT
George P and Lynch M. Ohmeda Biliblanket vs Wallaby Phototherapy System for the reduction of bilirubin levels in the home-care setting. *Clinical Pediatrics* 1994; 33:(3)178-80.	Comparison of two types of fibreoptic phototherapy
Giunta F and Rath J. Effect of environmental illumination in prevention of hyperbilirubinemia of prematurity. *Pediatrics* 1969; 44:(2)162-7.	Not an RCT
Hammerman C and Kaplan M. Comparative effects of two phototherapy delivery systems on cerebral blood flow velocity in term neonates. *Biology of the Neonate* 2004; 86:(4)254-8.	Not an RCT
Hohenauer L, Haschke F, and Gerstl JW. [Fototherapy of neonatal hyperbilirubinemia. Results of its clinical application (author's transl)]. [German]. *Klinische Padiatrie* 1976; 188:(4)314-9.	Non-English language articles
Ittmann PE and Schumacher PI. Blue light special: randomized trial of fiberoptic phototherapy in preterm infants. *Pediatric Research* 1992; 31:205A.	Conference abstract
Jackson CL, Tudehope D, Willis L *et al.* Home phototherapy for neonatal jaundice--technology and teamwork meeting consumer and service need. *Australian Health Review* 2000; 23:(2)162-8.	Not an RCT
Jaldo-Alba F, Munoz-Hoyos A, Molina-Carballo A *et al.* Light deprivation increases plasma levels of melatonin during the first 72 h of life in human infants. *Acta Endocrinologica* 1993; 129:(5)442-5.	Not an RCT

Kang JH and Shankaran S. Double phototherapy with high irradiance compared with single phototherapy in neonates with hyperbilirubinemia. *American Journal of Perinatology* 1995; 12:(3)178-80.	Not an RCT
Kaplan E, Herz F, Scheye E *et al.* Phototherapy in ABO hemolytic disease of the newborn infant. *Journal of Pediatrics* 1971; 79:(6)911-4.	Not an RCT
Kaplan M and Abramov A. Neonatal hyperbilirubinemia associated with glucose-6-phosphate dehydrogenase deficiency in Sephardic-Jewish neonates: Incidence, severity, and the effect of phototherapy. *Pediatrics* 1992; 90:(3 I)401-5.	Effect of G-6-PD deficiency status of phototherapy
Kurt A, Aygun AD, Kurt ANC *et al.* Use of phototherapy for neonatal hyperbilirubinemia affects cytokine production and lymphocyte subsets. *Neonatology* 2009; 95:(3)262-6.	Outcome not relevant to this guideline
Landry RJ, Scheidt PC, and Hammond RW. Ambient light and phototherapy conditions of eight neonatal care units: A summary report. *Pediatrics* 1985; 75:(2 II SUPPL.)434-6.	Not an RCT
Lemaitre BJ, Toubas PL, Dreux C *et al.* Increased gonadotropin levels in newborn premature females treated by phototherapy. *Journal of Steroid Biochemistry* 1979; 10:(3)335-7.	Outcome was not relevant to this guideline
Lucey J, Ferriero M, and Hewitt J. Prevention of hyperbilirubinemia of prematurity by phototherapy. *Pediatrics* 1968; 41:(6)1047-54.	Not an RCT
Ludington-Hoe SM and Swinth JY. Kangaroo mother care during phototherapy: effect on bilirubin profile. *Neonatal Network - Journal of Neonatal Nursing* 2001; 20:(5)41-8.	Comparison of three methods of giving 24 hour phototherapy
Maisels MJ and Gifford K. Normal serum bilirubin levels in the newborn and the effect of breast-feeding. *Pediatrics* 1986; 78:(5)837-43.	Not an RCT
Maisels MJ, Kring EA, and DeRidder J. Randomized controlled trial of light-emitting diode phototherapy. *Journal of Perinatology* 2007; 27:(9)565-7.	Comparison of two methods of applying multiple phototherapy
Maurer, H. M.; Fratkin, M.; McWilliams, N. B.; Kirkpatrick, B.; Draper, D.; Haggins, J. C.; Hunter, C. R. Effects of Phototherapy on Platelet Counts in Low-Birthweight Infants and on Platelet Production and Life Span in Rabbits. *Pediatrics* **1976,** *57,* 506-512.	No jaundice related outcomes
Mohapatra SS, Menon PS, Bhan MK *et al.* Cockington nomogram as a guide to phototherapy in the management of neonatal hyperbilirubinemia: evaluation in Indian neonates. *Indian Pediatrics* 1984;	Comparison of two criteria for managing hyperbilirubinaemia

21:(3)229-33.	
Newman T, Kuzniewicz M, Liljestrand P *et al.* Numbers Needed to Treat with Phototherapy According to American Academy of Pediatrics Guidelines. *Pediatrics* . 2009.	Background information
Niknafs P, Mortazavi AA, Torabinejad MH *et al.* Intermittent versus continuous phototherapy for reducing neonatal hyperbilirubinemia. *Iranian Journal of Pediatrics* 2008; 18:(3)251-6.	Comparison of two forms of intermittent phototherapy
Ozkan H, Olgun N, Oren H *et al.* The effect of phototherapy on total phospholipid levels of red cell membrane in jaundiced neonates. *Indian Journal of Pediatrics* 1993; 60:(4)600-2.	Not an RCT
Ozmert E, Erdem G, Topcu M *et al.* Long-term follow-up of indirect hyperbilirubinemia in full-term Turkish infants. *Acta Paediatrica* 1996; 85:(12)1440-4.	Not an RCT
Pezzati M, Biagiotti R, Vangi V *et al.* Changes in mesenteric blood flow response to feeding: Conventional versus fiber-optic phototherapy. *Pediatrics* 2000; 105:(2)350-3.	Not an RCT
Pritchard MA, Beller EM, and Norton B. Skin exposure during conventional phototherapy in preterm infants: A randomized controlled trial. *Journal of Paediatrics and Child Health* 2004; 40:(5-6)270-4.	Comparison of two combinations of positioning combined with clothing
Randomized, controlled trial of phototherapy for neonatal hyperbilirubinemia. Executive summary. *Pediatrics* 1985; 75:(2 Pt 2)385-6.	Executive summary
Reid MM, Marks E, McClure G *et al.* Phototherapy in rhesus haemolytic disease. *Lancet* 1972; 1:(7756)879-80.	Not an RCT
Rosenfeld W, Twist P, and Concepcion L. A new device for phototherapy treatment of jaundiced infants. *Journal of Perinatology* 1990; 10:(3)243-8.	Not an RCT
Sarici SU, Alpay F, Unay B *et al.* Comparison of the efficacy of conventional special blue light phototherapy and fiberoptic phototherapy in the management of neonatal hyperbilirubinaemia. *Acta Paediatrica* 1999; 88:(11)1249-53.	Not an RCT
Sarici SU, Alpay F, Unay B *et al.* Double versus single phototherapy in term newborns with significant hyperbilirubinemia. *Journal of Tropical Pediatrics* 2000; 46:(1)36-9.	Not an RCT
Sarin M, Dutta S, and Narang A. Randomized controlled trial of compact fluorescent lamp versus standard phototherapy for the treatment of neonatal hyperbilirubinemia. *Indian Pediatrics* 2006;	Comparison of two types of fluorescent lamps

43:(7)583-90.	
Scheidt PC, Bryla DA, Nelson KB *et al.* Phototherapy for neonatal hyperbilirubinemia: six-year follow-up of the National Institute of Child Health and Human Development clinical trial. *Pediatrics* 1990; 85:(4)455-63.	Follow-up of an included study
Sharma SK, Sood SC, Sharma A *et al.* Double versus single surface phototherapy in neonatal hyperbilirubinemia. *Indian Pediatrics* 1985; 22:(3)235-9.	Not an RCT
Srivastava KL, Misra PK, Kaul R *et al.* Double surface phototherapy versus single surface phototherapy in neonatal jaundice. *Indian Journal of Medical Research* 1980; 71:746-50.	Not an RCT
Tabb PA, Savage DC, Inglis J *et al.* Controlled trial of phototherapy of limited duration in the treatment of physiological hyperbilirubinaemia in low-birth-weight infants. *Lancet* 1972; 2:(7789)1211-2.	Incomplete data – 1 case of exchange transfusion but group allocation not given
Tan KL, Chirino-Barcelo Y, Aw TC *et al.* Effect of phototherapy on thyroid stimulatory hormone and free thyroxine levels. *Journal of Paediatrics and Child Health* 1996; 32:(6)508-11.	Not an RCT
Tan KL. Comparison of the efficacy of fiberoptic and conventional phototherapy for neonatal hyperbilirubinemia. *Journal of Pediatrics* 1994; 125:(4)607-12.	Not an RCT
Tan KL. Decreased response to phototherapy for neonatal jaundice in breast-fed infants. *Archives of Pediatrics and Adolescent Medicine* 1998; 152:(12)1187-90.	Not an RCT
Thaithumyanon P and Visutiratmanee C. Double phototherapy in jaundiced term infants with hemolysis. *Journal of the Medical Association of Thailand* 2002; 85:(11)1176-81.	Not an RCT
Yaseen H, Khalaf M, Rashid N *et al.* Does prophylactic phototherapy prevent hyperbilirubinemia in neonates with ABO incompatibility and positive Coombs' test? *Journal of Perinatology* 2005; 25:(9)590-4.	Not an RCT
Zainab K and Adlina S. Effectiveness of home versus hospital phototherapy for term infants with uncomplicated hyperbilirubinemia: a pilot study in Pahang, Malaysia. *Medical Journal of Malaysia* 2004; 59:(3)395-401.	Conference abstract

Q7. Is it beneficial to give additional fluids (cup feeds, fluids) during treatment with phototherapy?

Reference	**Reason for exclusion**
Amato M, Berthet G, and von MG. Influence of fatty diet on neonatal jaundice in breast-fed infants. *Acta Paediatrica Japonica* 1988; 30:(4)492-6.	Not an intervention study
Arias IM and Gartner LM. Production of unconjugated hyperbilirubinaemia in full-term in new-born infants following administration of pregnane-3(Alpha),20(Beta)-diol.. *Nature* 1964; 203:1292-3.	Not an intervention study
Capps FP, Gilles HM, Jolly H *et al.* Glucose-6-Phosphate Dehydrogenase deficiency and neonatal jaundice in Nigeria: Their relation to the use of prophylactic vitamin-K. *Lancet* 1963; 2:(7304)379-83.	Prevention study
De Carvalho M, Hall M, and Harvey D. Effects of water supplementation on physiological jaundice in breast-fed babies. *Archives of Disease in Childhood* 1981; 56:(7)568-9.	Prevention study
Elander G and Lindberg T. Hospital routines in infants with hyperbilirubinemia influence the duration of breast feeding. *Acta Paediatrica Scandinavica* 1986; 75:(5)708-12.	Not an RCT
Gourley GR, Li Z, Kreamer BL *et al.* A controlled, randomized, double-blind trial of prophylaxis against jaundice among breastfed newborns. *Pediatrics* 2005; 116:(2)385-91.	Prevention study
Gulcan H, Tiker F, and Kilicdag H. Effect of feeding type on the efficacy of phototherapy. *Indian Pediatrics* 2007; 44:(1)32-6.	Not an RCT
Lucas A and Baker BA. Breast milk jaundice in premature infants. *Archives of Disease in Childhood* 1986; 61:(11)1063-7.	Prevention study
Lucas A, Gore SM, Cole TJ *et al.* Multicentre trial on feeding low birthweight infants: effects of diet on early growth. *Archives of Disease in Childhood* 1984; 59:(8)722-30.	Prevention study
Makay B, Duman N, Ozer E *et al.* Randomized, controlled trial of early intravenous nutrition for prevention of neonatal jaundice in term and near-term neonates. *Journal of Pediatric Gastroenterology*	Not all babies received phototherapy

and Nutrition 2007; 44:(3)354-8.	
Mowat A. Double-blind trial of effects of aspartic acid, orotic acid and glucose on serum bilirubin concentrations in infants born before term. *Archives of Disease in Childhood* 1971; 46:(247)397.	Conference abstract
Nicoll A, Ginsburg R, and Tripp JH. Supplementary feeding and jaundice in newborns. *Acta Paediatrica Scandinavica* 1982; 71:(5)759-61.	Prevention study
Osborn LM and Bolus R. Breast feeding and jaundice in the first week of life. *Journal of Family Practice* 1985; 20:(5)475-80.	Prevention study
Sievers E, Clausen U, Oldigs HD *et al.* Supplemental feeding in the first days of life - Effects on the recipient infant. *Annals of Nutrition and Metabolism* 2002; 46:(2)62-7.	Prevention study
Spear ML, Stahl GE, and Paul MH. The effect of 15-hour fat infusions of varying dosage on bilirubin binding to albumin. *Journal of Parenteral and Enteral Nutrition* 1985; 9:(2)144-7.	Not an RCT
Varimo P, Simila S, von WL *et al.* Interruption of breast feeding as treatment of hyperbilirubinaemia. *Helvetica Paediatrica Acta* 1985; 40:(6)497-9.	Correspondence
Villalaz RA, Toner N, and Chiswick ML. Dietary vitamin E and polyunsaturated fatty acid (PUFA) in newborn babies with physiological jaundice. *Early Human Development* 1981; 5:(2)145-50.	Not an RCT
Wennberg RP, Schwartz R, and Sweet AY. Early versus delayed feeding of low birth weight infants: effects on physiologic jaundice. *Journal of Pediatrics* 1966; 68:(6)860-6.	Prevention study
Wharton BA and Bower BD. Immediate or later feeding for premature babies? A controlled trial. *Lancet* 1965; 2:(7420)769-72.	Not an RCT
Winfield CR and MacFaul R. Clinical study of prolonged jaundice in breast- and bottle-fed babies. *Archives of Disease in Childhood* 1978; 53:(6)506-7.	Effect of breast-feeding on prolonged jaundice – No intervention
Wu PY and Moosa A. Effect of phototherapy on nitrogen and electrolyte levels and water balance in jaundiced preterm infants. *Pediatrics* 1978; 61:(2)193-8.	Not an RCT

Q8. Exchange transfusion

Reference	**Reason for exclusion**
Bajpai PC, Denton RL, Harpur E *et al.* The effect on serum ionic magnesium of exchange transfusion with citrated as opposed to heparinized blood. *Canadian Medical Association Journal* 1967; 96:(3)148-53.	No jaundice related outcomes
Behjati S, Sagheb S, Aryasepehr S *et al.* Adverse events associated with neonatal exchange transfusion for hyperbilirubinemia. *Indian Journal of Pediatrics* 2009; 76:(1)83-5.	Adverse effects of exchange transfusions in Iran – not relevant to UK guideline
Chen H, Lee M, and Tsao L. Exchange transfusion using peripheral vessels is safe and effective in newborn infants. *Pediatrics* 2008; 122:(4)e905-e910.	Conference abstract
Cser A. Metabolic and hormonal changes during and after exchange transfusion with heparinized or ACD blood. *Archives of Disease in Childhood* 1974; 49:(12)940-5.	No jaundice related outcomes
Karamifar H, Pishva N, and Amirhakimi GH. Prevalence of phototherapy-induced hypocalcemia. *Iranian Journal of Medical Sciences* 2002; 27:(4)166-8.	Outcome not of interest to GDG
Kauschansky A, Dulitzky F, and Allalouf D. Thyroxine, thyrotropin, and thyroxine-binding globulin changes following neonatal blood exchange transfusions. *Israel Journal of Medical Sciences* 1980; 16:(12)883.	Conference abstract
Kreuger AO. Exchange transfusion with ACD-adenine blood. A follow-up study. *Transfusion* 1973; 13:(2)69-72.	Not an RCT
Ozsoylu S. Heparinised whole blood or citrated blood for exchange transfusion. *European Journal of Pediatrics* 2001; 160:(3).	Correspondence
Paul SS, Thomas V, and Singh D. Outcome of neonatal hyperbilirubinemia managed with exchange transfusion. *Indian Pediatrics* 1988; 25:(8)765-9.	Not an RCT

Raichur DV, Wari PK, Kasturi AV *et al.* Peripheral vessel exchange transfusion. *Indian Pediatrics* 1999; 36:914-7.	Not an RCT
Salas AA and Mazzi E. Exchange transfusion in infants with extreme hyperbilirubinemia: An experience from a developing country. *Acta Paediatrica* 2008; 97:(6)754-8.	Survey of adverse effects in a developing country
Strbak V, Huttova M, and Foldes O. Exchange transfusion in newborns: Rapid fall of plasma thyroid hormones and attenuated TSH response up to 48 hours. *Endocrinologia Experimentalis* 1982; 16:(1)33-42.	Not an RCT
Thayyil S and Milligan DWA. Single versus double volume exchange transfusion in jaundiced newborn infants. *Cochrane Database of Systematic Reviews* 2008;(3).	Review of a single study – included the original study
Todd NA. Isovolemic exchange transfusion of the neonate. *Neonatal Network* 1995; 14:(6)75-7.	Not an RCT

Q9. What are the other ways of treating hyperbilirubinaemia?

Reference	Reason for exclusion
Agarwal SS, Misra PK, Upadhyay UK *et al.* Comparative trials of phototherapy versus photobarb in the management of neonatal hyperbilirubinaemia. *Indian Pediatrics* 1976; 13:(1)41-5.	Not an RCT
Alpay F, Sarici SU, Okutan V *et al.* High-dose intravenous immunoglobulin therapy in neonatal immune haemolytic jaundice. *Acta Paediatrica* 1999; 88:(2)216-9.	Not an RCT
Amitai Y, Regev M, Arad I *et al.* Treatment of neonatal hyperbilirubinemia with repetitive oral activated charcoal as an adjunct to phototherapy. *Journal of Perinatal Medicine* 1993; 21:(3)189-94.	Not an RCT
Arya VB, Agarwal R, Paul VK *et al.* Efficacy of Oral Phenobarbitone in Term "At Risk" Neonates in Decreasing Neonatal Hyperbilirubinemia: A Randomized Double-blinded, Placebo Controlled Trial. *Indian Pediatrics* 2004; 41:(4)327-32.	Prevention study
Ashkan MM and Narges P. Erratum: The effect of low and moderate doses of clofibrate on serum bilirubin level in jaundiced term neonates (Paediatric and Perinatal Drug Therapy (2007) vol. 8 (51-54)). *Paediatric and Perinatal Drug Therapy* 2008; 8:(4)157.	Erratum
Ashkan MM and Narges P. The effect of low and moderate doses of clofibrate on serum bilirubin level in jaundiced term neonates. *Paediatric and Perinatal Drug Therapy* 2007; 8:(2)51-4.	Paper withdrawn as it was a duplicate publication
Badeli HR, Sharafi R, and Sajedi SA. The effect of clofibrate on neonatal hyperbilirubinemia in uncomplicated jaundice. *Iranian Journal of Pediatrics* 2008; 18:(1)-24.	Not an RCT
Bader D, Yanir Y, Kugelman A *et al.* Induction of early meconium evacuation: Is it effective in reducing the level of neonatal hyperbilirubinemia? *American Journal of Perinatology* 2005; 22:(6)329-33.	Prevention study
Blum D and Etienne J. Agar in control of hyperbilirubinemia. *Journal of Pediatrics* 1973; 83:(2)345.	Correspondence

Caglayan S, Candemir H, Aksit S *et al.* Superiority of oral agar and phototherapy combination in the treatment of neonatal hyperbilirubinemia. *Pediatrics* 1993; 92:(1)86-9.	Incomplete data (not information given on numbers allocated to each group)
Canby JP. Charcoal therapy of neonatal jaundice: A preliminary report on a promising method for reducing the need for exchange transfusions. *Clinical Pediatrics* 1965; 4:178-80.	Not an RCT
Chen H. Artemisia composita for the prevention and treatment of neonatal hemolysis and hyperbilirubinemia. *Journal of Traditional Chinese Medicine* 1987; 7:(2)105-8.	Not an RCT
Chen JY, Ling UP, and Chen JH. Early meconium evacuation: Effect on neonatal hyperbilirubinemia. *American Journal of Perinatology* 1995; 12:(4)232-4.	Prevention study
Ebbesen F and Brodersen R. Comparison between two preparations of human serum albumin in treatment of neonatal hyperbilirubinaemia. *Acta Paediatrica Scandinavica* 1982; 71:(1)85-90.	Not an RCT
Girish G, Chawla D, Agarwal R *et al.* Efficacy of two dose regimes of intravenous immunoglobulin in rh hemolytic disease of newborn - A randomized controlled trial. *Indian Pediatrics* 2008; 45:(8)653-9.	Prevention study
Gouyon JB, Collin A, and d'Athis P. Effect of preventive phenobarbital treatment on the duration of phototherapy in low birth weight icteric twins. *Developmental Pharmacology and Therapeutics* 1984; 7:(SUPPL. 1)-193.	Prevention study
Hammerman C, Kaplan M, Vreman HJ *et al.* Intravenous immune globulin in neonatal ABO isoimmunization: Factors associated with clinical efficacy. *Biology of the Neonate* 1996; 70:(2)69-74.	Not an RCT
Herbal teas blamed for neonatal jaundice. *Doctor* 1989;(Feb)35.	Comment
Hosono S, Ohno T, Kimoto H *et al.* Effects of albumin infusion therapy on total and unbound bilirubin values in term infants with intensive phototherapy. *Pediatrics International* 2001; 43:(1)8-11.	Not an RCT
Jinbang D. Brain damage due to neonatal kernicterus successfully reversed with acupuncture: a case report. *American Journal of Acupuncture* 1995; 23:(1)5-7.	Not an RCT
Kappas A, Drummond GS, Henschke C *et al.* Direct comparison of Sn-mesoporphyrin, an inhibitor of bilirubin production, and phototherapy in controlling hyperbilirubinemia in term and near-term newborns. *Pediatrics* 1995; 95:(4)468-74.	Prevention study
Kappas A, Drummond GS, Manola T *et al.* Sn-protoporphyrin use in the management of hyperbilirubinemia in term newborns with direct Coombs-positive ABO incompatibility. *Pediatrics* 1988;	Two prevention studies

81:(4)485-97.	
Kemper K, Horwitz RI, and McCarthy P. Decreased neonatal serum bilirubin with plain agar: A meta-analysis. *Pediatrics* 1988; 82:(4)631-8.	Not an RCT
Khosla D, Lall JC, and Sood SC. A comparative trial of phototherapy, with and without riboflavin, in the management of neonatal hyperbilirubinaemia. *Indian Journal of Medical Research* 1981; 74:(6)852-6.	Not an RCT
Koranyi G, Kovacs J, and Voros I. D-penicillamine treatment of hyperbilirubinaemia in preterm infants. *Acta Paediatrica Academiae Scientiarum Hungaricae* 1978; 19:(1)9-16.	Prevention study
Kumar R, Narang A, Kumar P *et al.* Phenobarbitone prophylaxis for neonatal jaundice in babies with birth weight 1000-1499 grams. *Indian Pediatrics* 2002; 39:(10)945-51.	Prevention study
Lakatos L, Kover B, and Peter F. D-penicillamine therapy of neonatal hyperbilirubinaemia. *Acta Paediatrica Academiae Scientiarum Hungaricae* 1974; 15:(1)77-85.	Not an RCT
Lakatos L, Kover B, Vekerdy S *et al.* D-penicillamine therapy of neonatal jaundice: comparison with phototherapy. *Acta Paediatrica Academiae Scientiarum Hungaricae* 1976; 17:(2)93-102.	Not an RCT
Levin GE, McMullin GP, and Mobarak AN. Controlled trial of phenobarbitone in neonatal jaundice. *Archives of Disease in Childhood* 1970; 45:(239)93-6.	Not an RCT
Liu L-H, Wang S-Y, Shu X-H *et al.* [Treatment of newborn breast - Milk jaundice using artemisia capillaris trough grass soup]. *Journal of Dalian Medical University* 2007; 29:(2)183-4.	Not an RCT
Malamitsi-Puchner A, Hadjigeorgiou E, Papadakis D *et al.* Combined treatment of neonatal jaundice with phototherapy, cholestyramine, and bicarbonate. *Journal of Pediatrics* 1981; 99:(2)324-5.	Duplicate publication
Martinez JC, Garcia HO, Otheguy LE *et al.* Control of severe hyperbilirubinemia in full-term newborns with the inhibitor of bilirubin production Sn-mesoporphyrin. *Pediatrics* 1999; 103:(1)1-5.	Prevention study
Moller J. Agar ingestion and serum bilirubin values in newborn infants. *Acta Obstetricia et Gynecologica Scandinavica - Supplement* 1974; 29:61-3.	Prevention study
Murki S, Dutta S, Narang A *et al.* A randomized, triple-blind, placebo-controlled trial of prophylactic oral phenobarbital to reduce the need for phototherapy in G6PD-deficient neonates. *Journal of Perinatology* 2005; 25:(5)325-30.	Prevention study

Orzalesi M, Savignori PG, and Nodari S. The effect of agar feeding on serum bilirubin levels of low birthweight infants. *Pediatric Research* 1975; 9:369.	Conference abstract
Pawaskar N. Alertness is the key! *National Journal of Homoeopathy* 2004; 6:(2)109-10.	Not an RCT
Pishva N, Madani A, and Homayoon K. Prophylactic intravenous immunoglobulin in neonatal immune hemolytic jaundice. *Iranian Journal of Medical Sciences* 2000; 25:(3-4)129.	Prevention study
Poland RL and Odell GB. Physiologic jaundice: the enterohepatic circulation of bilirubin. *New England Journal of Medicine* 1971; 284:(1)1-6.	Prevention study
Ramboer C, Thompson RP, and Williams R. Controlled trials of phenobarbitone therapy of neonatal jaundice. *Lancet* 1969; 1:(7602)966-8.	Prevention study
Ramboer C, Thompson RP, and Williams R. Treatment of neonatal jaundice with phenobarbitone. *Gut* 1969; 10:(5)414.	Conference abstract
Romagnoli C, Polidori G, Foschini M *et al.* Agar in the management of hyperbilirubinaemia in the premature baby. *Archives of Disease in Childhood* 1975; 50:(3)202-4.	Prevention study
Rubo J, Wahn V, Hohendahl J *et al.* Influence of high dosage immuno-globulin therapy on hyperbilirubinemia in rhesus-hemolytic disease. A cooperative study. *Monatsschrift fur Kinderheilkunde* 1996; 144:(5)516-9.	Non-English language paper
Salle B, Pasquer P, Desebbe C *et al.* Phenobarbital in prophylaxis of neonatal jaundice. A control trial of two regimens. *Helvetica Paediatrica Acta* 1977; 32:(3)221-6.	Prevention study
Segni G, Polidori G, and Romagnoli C. Bucolome in prevention of hyperbilirubinaemia in preterm infants. *Archives of Disease in Childhood* 1977; 52:(7)549-50.	Prevention study
Spinelli SL, Otheguy LE, Larguia MA *et al.* Postnatal use of high-dose intravenous immunoglobulin therapy in rhesus hemolytic disease treatment. *Journal of Perinatal Medicine* 2001; 29:(Suppl 1)683.	Conference abstract
Tanyer G, SiklarZ, Dallar Y *et al.* Multiple dose IVIG treatment in neonatal immune hemolytic jaundice. *Journal of Tropical Pediatrics* 2001; 47:(1)50-3.	Not an RCT
Todorovic N, Lukic B, and Barjaktarovic N. The effect of phototherapy and phenobarbital on sister-chromatid exchanges in jaundiced newborns. *Archives of Gastroenterohepatology* 1993; 12:(3-4)143-4.	Not an RCT

Trevett TN, Jr., Dorman K, Lamvu G *et al.* Antenatal maternal administration of phenobarbital for the prevention of exchange transfusion in neonates with hemolytic disease of the fetus and newborn. *American Journal of Obstetrics and Gynecology* 2005; 192:(2)478-82.	Not an RCT
Valaes T, Drummond GS, and Kappas A. Control of hyperbilirubinemia in glucose-6-phosphate dehydrogenase-deficient newborns using an inhibitor of bilirubin production, Sn-mesoporphyrin. *Pediatrics* 1998; 101:(5)E1.	Five prevention studies
Valaes T, Kipouros K, Petmezaki S *et al.* Effectiveness and safety of prenatal phenobarbital for the prevention of neonatal jaundice. *Pediatric Research* 1980; 14:(8)947-52.	Prevention study
Valaes T, Petmezaki S, and Doxiadis SA. Effect on neonatal hyperbilirubinemia of phenobarbital during pregnancy or after birth: practical value of the treatment in a population with high risk of unexplained severe neonatal jaundice. *Birth defects original article series* 1970; 6:(2)46-54.	Prevention study
Valaes T, Petmezaki S, Henschke C *et al.* Control of jaundice in preterm newborns by an inhibitor of bilirubin production: studies with tin-mesoporphyrin. *Pediatrics* 1994; 93:(1)1-11.	Prevention study
Valdes OS, Maurer HM, Shumway CN *et al.* Controlled clinical trial of phenobarbital and-or light in reducing neonatal hyperbilirubinemia in a predominantly Negro population. *Journal of Pediatrics* 1971; 79:(6)1015-7.	Prevention study
Vest M, Signer E, Weisser K *et al.* A double blind study of the effect of phenobarbitone on neonatal hyperbilirubinaemia and frequency of exchange transfusion. *Acta Paediatrica Scandinavica* 1970; 59:(6)681-4.	Prevention study
Wallin A and Boreus LO. Phenobarbital prophylaxis for hyperbilirubinemia in preterm infants. A controlled study of bilirubin disappearance and infant behavior. *Acta Paediatrica Scandinavica* 1984; 73:(4)488-97.	Prevention study
Weisman LE, Merenstein GB, and Digirol M. The effect of early meconium evacuation on early-onset hyperbilirubinemia. *American Journal of Diseases of Children* 1983; 137:(7)666-8.	Prevention study
Windorfer A, Jr., Kunzer W, Bolze H *et al.* Studies on the effect of orally administered agar on the serum bilirubin level of premature infants and mature newborns. *Acta Paediatrica Scandinavica* 1975; 64:(5)699-702.	Prevention study
Yeung CY and Field CE. Phenobarbitone therapy in neonatal hyperbilirubinaemia. *Lancet* 1969;	Not an RCT

2:(7612)135-9.	
Zhuo A, Luo L, Chen C *et al.* Clinical observation of Chinese drugs in prevention of neonatal hyperbilirubinemia. *Journal of Traditional Chinese Medicine* 1997; 17:(3)174-7.	Prevention study

Q10. How to monitor a baby with jaundice?

Q11. When to discharge a baby treated for hyperbilirubinaemia? What follow-up is required?

Reference	Reason for exclusion
Chou S, Palmer RH, Ezhuthachan S *et al.* Management of hyperbilirubinemia in newborns: measuring performance by using a benchmarking model. *Pediatrics* 2003; 112:(6)1264-73.	Overview
Dhaded SM, Kumar P, and Narang A. Safe bilirubin level for term babies with non-hemolytic jaundice. *Indian Pediatrics* 1996; 33:(12)1059-60.	Correspondence
Dollberg G, Mimouni M, and Dollberg S. Computerized decision-making assistance for managing neonatal hyperbilirubinemia. *Pediatrics* 2006; 117:(1)262-3.	Overview of a software package to assist decision making
Erdeve O. Rebound bilirubin: On what should the decision to recommence phototherapy be based? *Archives of Disease in Childhood* 2006; 91:(7)623.	Correspondence
Gale R, Seidman DS, and Stevenson DK. Hyperbilirubinemia and early discharge. *Journal of Perinatology* 2001; 21:(1)40-3.	Overview
Hyperbilirubinemia in term newborn infants. The Canadian Paediatric Society. *Canadian Family Physician* 1999; 45:2690-2.	Position statement
Lasker MR and Holzman IR. Neonatal jaundice: When to treat, when to watch and wait. *Postgraduate Medicine* 1996; 99:(3)187-98.	Overview

Lock M and Ray JG. Higher neonatal morbidity after routine early hospital discharge: Are we sending newborns home too early? *Canadian Medical Association Journal* 1999; 161:(3)249-53.	Impact of early discharge from hospital on incidence of jaundice
Managing hyperbilirubinemia and preventing kernicterus. *Joint Commission Perspectives on Patient Safety* 2006; 6:(6)3.	Overview
Managing jaundice in full-term infants. *Nurse Practitioner* 2005; 30:(1)6-7.	Synopsis of AAP 2004
Moerschel SK, Cianciaruso LB, and Tracy LR. A practical approach to neonatal jaundice. *American Family Physician* 2008; 77:(9)1255-62.	Overview
Pados BF. Safe transition to home: preparing the near-term infant for discharge. *Newborn & Infant Nursing Reviews* 2007; 7:(2)106-13.	Overview
Reyes CA, Stednitz DR, Hahn C *et al.* Evaluation of the BiliChek being used on hyperbilirubinemic newborns undergoing home phototherapy. *Archives of Pathology and Laboratory Medicine* 2008; 132:(4)684-9.	Evaluation of BiliChek usage during home phototherapy
Screening reduces the occurrence of hyperbilirubinemia. *Contemporary Pediatrics* 2006; 23:(7)85.	Overview of screening to prevention jaundice
Thornton SN, Thompson BS, Millar JA *et al.* Neonatal bilirubin management as an implementation example of interdisciplinary continuum of care tools. *AMIA ..* 2007; Annual Symposium Proceedings/AMIA Symposium.:726-30.	Overview
Wennberg RP, Ahlfors CE, Bhutani VK *et al.* Toward understanding kernicterus: a challenge to improve the management of jaundiced newborns. *Pediatrics* 2006; 117:(2)474-85.	Overview
Zanjani SE, Safavi M, Jalali S *et al.* Incidence and associated factors of neonatal hyperbilirubinemia at Hedayat Hospital [Farsi]. *SBMU Faculty of Nursing & Midwifery Quarterly* 2007; 16:(59)-1p.	Non-English language article

Q13. What information and support should be given to parents/carers of babies with neonatal hyperbilirubinaemia?

Reference	Reason for exclusion
Amirshaghaghi A, Ghabili K, Shoja MM *et al.* Neonatal jaundice: knowledge and practice of Iranian mothers with icteric newborns. *Pakistan Journal of Biological Sciences* 2008; 11:(6)942-5.	Maternal knowledge of jaundice
Balaguer A, Quiroga-Gonzalez R, Camprubi M *et al.* Reducing errors in the management of hyperbilirubinaemia: validating a software application. *Archives of Disease in Childhood - Fetal and Neonatal Edition* 2009; 94:(1)F45-F47.	Evaluation of a software package
Callaghan P, Greenberg L, Brasseux C *et al.* Postpartum counseling perceptions and practices: What's new? *Ambulatory Pediatrics* 2003; 3:(6)284-7.	Dealt with postpartum counseling
Christakis DA and Rivara FP. Pediatricians' awareness of and attitudes about four clinical practice guidelines. *Pediatrics* 1998; 101:(5)825-30.	Awareness of guidelines
Davanzo R, Brondello C, and Cerchio R. Hospital discharge of healthy newborns. [Italian]. *Medico e Bambino* 2006; 25:(9)562-9.	Non-=English language article
Going home with your late preterm infant. *Contemporary Pediatrics* 2007; 24:(11)59.	Example of a parent information sheet
Goldenring JM. What to tell parents before they leave the hospital. *Contemporary Pediatrics* 2007; 24:(4)52.	Example of a parent information sheet
Information from your family doctor. Jaundice and your baby. *American Family Physician* 2002; 65:(4)613-4.	Example of a parent information sheet
Jaundice in newborns. Information for patients. *Canadian Family Physician* 1999; 45:2696.	Example of a parent information sheet
Khalesi N and Rakhshani F. Knowledge, attitude and behaviour of mothers on neonatal jaundice. *JPMA - Journal of the Pakistan Medical Association* 2008; 58:(12)671-4.	Maternal knowledge of jaundice
Madlon-Kay DJ. Maternal assessment of neonatal jaundice after hospital discharge. *Journal of Family Practice* 2002; 51:(5)445-8.	Training parents to assess jaundice

Maisels MJ. Jaundice in a newborn: answers to questions about a common clinical problem... first of two parts. *Contemporary Pediatrics* 2005; 22:(5)34-40.	Overview
Maisels MJ. Jaundice in a newborn: how to head off an urgent situation... second of two parts. *Contemporary Pediatrics* 2005; 22:(5)41.	Overview
Mannel R. Initiating breastfeeding and special considerations for the infant with hyperbilirubinemia: what the childbirth educator needs to know. *International Journal of Childbirth Education* 2006; 21:(1)11-3.	Education on breastfeeding – not specific to jaundice
McMillan DD, Lockyer JM, Magnan L *et al.* Effect of educational program and interview on adoption of guidelines for the management of neonatal hyperbilirubinemia.[see comment]. *CMAJ Canadian Medical Association Journal* 1991; 144:(6)707-12.	Eduction was for clinicians
Ogunfowora OB, Adefuye PO, and Fetuga MB. What do expectant mothers know about neonatal jaundice? *International Electronic Journal of Health Education* 2006; 9:134-40.	Maternal knowledge of jaundice
Patient education. How to care for your baby with jaundice. *Nurse Practitioner* 1999; 24:(4)29.	Example of a parent information sheet
Petrova A, Mehta R, Birchwood G *et al.* Management of neonatal hyperbilirubinemia: Pediatricians' practices and educational needs. *BMC Pediatrics* 2006; 6,;#2006. Article Number.	Education for clinicians
Sater KJ. Color me yellow: caring for the infant with hyperbilirubinemia. *Journal of Intravenous Nursing* 1995; 18:(6)317-25.	Overview – background information only
Stokowski LA. Family teaching toolbox. Newborn jaundice. *Advances in Neonatal Care* 2002; 2:(2)115-6.	Example of a parent information sheet

Appendix

H. Evidence tables

Table of Contents

Which factors affect the relationship between neonatal hyperbilirubinaemia and kernicterus or other adverse outcomes (neurodevelopmental, auditory)?

Bibliographic details	Study type and Evidence level	Patient characteristics	Methodology and interventions	Results	Reviewers Comments
Newman TB; Year: 2000 Country: USA [8]	Study Type: Nested case-control study Evidence Level: II	Cohort of all infants with BW = 2000 grams and GA = 36 weeks born alive at 11 hospitals of a health maintenance organization during a two year period (N = 51,387) <u>Cases:</u> Babies with maximum TSB levels = 428 micromol/L within the first 30 days after birth N = 73 Mean BW: Not reported Mean GA: Not reported Gender: Males = 67.1% Ethnicity: Not reported (only maternal race specified)	1) Relationship of clinical and demographic factors associated with hyperbilirubinaemia evaluated by bivariate analysis and OR 2) Risk factors significant in the univariate model entered into multiple regression analysis to find independent predictors of hyperbilirubinaemia – both by including and excluding early jaundice cases <u>Early jaundice cases</u> (N = 14) defined as babies with TSB exceeding recommended phototherapy threshold for age during birth hospitalization, those given phototherapy during birth hospitalization,	<u>Maternal and prenatal factors associated with significant hyperbilirubinaemia (those with p<0.05 in bivariate analysis)</u> *Maternal factors* ≠ Race, ≠ maternal age, ≠ family HISTORY OF jaundice in a newborn, ≠ vacuum delivery *Neonatal factors* ≠ Male sex, ≠ lower GA, ≠ early jaundice, ≠ cephalohaematoma,	Unselected population but exclusion criteria not defined Confounding variables controlled for during multivariate analysis Test & Reference test described adequately Reference test a standard test Blinding – Not reported

		<u>Controls:</u> Random sample of babies from the cohort with maximum TSB levels = 428 micromol/L N = 423 Mean BW: Not reported Mean GA: Not reported Gender: Males = 54.4% Ethnicity: Not reported (only maternal race specified) For analyses examining the use of phototherapy only, additional random sample of 30 babies with maximum TSB levels of 342 to 426 micromol/L added to the control group Exclusion criteria: Not defined	when jaundice noted at less than 20 hours of age and TSB not measured within 6 hrs of that time. 3) Risk index developed by assigning points equal to the OR for risk factors that were significant in the logistic regression model with the exclusion of early jaundice cases, and predictive accuracy compared by the c-statistic (equal to area under ROC curve) <u>Reference standard:</u> Significant hyperbilirubinaemia defined as maximum TSB levels = 428 micromol/L within the first 30 days after birth.	≠ bruising, ≠ breastfeeding at time of discharge <u>Factors independently associated with significant hyperbilirubinaemia from multivariate regression analysis (OR with 95%CI)</u> *All cases (N = 73)* Early jaundice: OR 7.3 (2.8-19) GA (per wk): OR 0.6 (0.4-0.7) Breastfeed only at discharge: OR 6.9 (2.7-17.5) Asian race: OR 3.1 (1.5-6.3) Bruising: OR 3.5 (1.7-7.4) Cephalohaematoma: OR 3.2 (1.1-9.2) Maternal age <u>></u> 25 yrs: OR 2.6 (1.1-9.2) *Cases excluding early jaundice (N = 59)* GA (per wk): OR 0.6 (0.4-0.7) Breastfeed only at discharge: 5.7 (2.1-	

				15.5) Asian race: OR 3.5 (1.7-7.4) Bruising: OR 4.0 (1.8-8.8) Cephalohaematoma: OR 3.3 (1.1-10) Maternal age $\geq$ 25 yrs: OR 3.1 (1.2-8.1) Family HISTORY OF jaundice: 6.0 (1.0-36.0); p = 0.05 Risk Index scoring 6 points each for exclusive breastfeeding and family HISTORY OF jaundice in a newborn, 4 points each for bruising and Asian race, 3 points each for cephalhematoma and maternal age $\geq$ 25 yrs, 1 point for male sex, -2 points for black race, and 2(40-GA) Accuracy of Risk Index score in predicting significant hyperbilirubinaemia	

				Overall c-statistic 0.85 *Risk index score < 10* +LR: 0.2 *Risk index score > 10* +LR: 2.2 *Risk index score > 20* +LR: 18.2	

Newman TB et al; Year: 2002 Country: USA 9	Study Type: Nested case-control study Evidence Level: II	Cohort of all infants with BW = 2000 grams and GA = 36 weeks born alive at 12 hospitals of a health maintenance organization during a four year period (n = 105,384) Cases: Babies with maximum TSB levels = 428 micromol/L within the first 30 days after birth (n = 140) Controls: Random sample of babies from the cohort with maximum TSB levels = 428 micromol/L (n = 631) Exclusion criteria: Babies with conjugated hyperbilirubinaemia	1) Frequency of jaundice noted in the medical record in term and near-term newborns less than 24 hours old 2) Association of jaundice noted in the first 24 hours after birth with the use of phototherapy and risk of developing hyperbilirubinaemia after controlling for confounding variables -	1) Frequency of jaundice noted in newborns within 24 hours of age (Kaplan Meier survival estimates + no. with TSB measured) *Less than 18 hours of age* 3.8% *Less than 24 hours of age* 6.7% 2) Association of jaundice noted within 24 hours of age with risk factors (results of bivariate analysis) No statistically significant difference between the cases and the controls for risk factors ethnicity, sex, gestational age, breastfeeding, cephalhematoma or the birth cohorts Relationship between jaundice noted within 24 hours of birth and phototherapy/ hyperbilirubinaemia (Mantel Haenszel OR with 95%CI) *Phototherapy* Cases: 18.9% Controls: 1.7% M-H OR 10.1 (4.2-24.4)	Nested case-control study Some cases were included in 42290 – should we excluded 42290 Cases and controls taken from comparable populations but exclusion criteria not well defined Confounding variables controlled Methodology described adequately but exact number of babies with jaundice noted in first 24 hours calculated with Kaplan Meier analysis

Kuzniewicz MW et al; Year: 2008 Country: USA 10	Study Type: Nested case-control study Evidence Level: II	Cohort of all babies with BW = 2000 grams and GA = 34 weeks born alive at hospitals of a health maintenance organization during a 10 year period (n = 285,295). From this cohort 13,843 babies with qualifying TSB level of 291 to 392 micromol/L measured at = 48 hours of age taken as reference population Cases: Babies with maximum TSB levels = 427 micromol/L after the qualifying TSB (n = 62) Mean BW: 3374 + 527 grams Mean GA: 38.3 + 1.7 weeks Mean age at entry: 71.5 + 19.4 hours Gender: Males = 58.9% Ethnicity: asian = 27.4% black = 8.1%	Cases and controls matched on risk group status (low, medium and high risk based on the hour-specific bilirubin centiles, gestational age and DAT results) and difference between their TSB levels and the TSB threshold levels for phototherapy as defined by the AAP 1) Relationship of clinical and demographic factors associated with hyperbilirubinaemia evaluated by bivariate analysis 2) Risk factors significant in the bivariate model (at p<0.1) entered into multiple regression analysis to find independent predictors of hyperbilirubinaemia 3) Predictive accuracy of the final risk factor model evaluated by the c-statistic (equal to area under ROC curve)	1) Variables associated with severe hyperbilirubinaemia (those with p<0.1 in bivariate analysis) *Demographic factors* When compared to 40+ weeks GA 38-39 weeks (p = 0.01) GA 34-37 weeks (p = 0.06) birth hospitalization < 48 hours (p = 0.07) *History & physical examination factors* Bruising (p = 0.007) *Laboratory values* Qualifying TSB occurring during birth hospitalization (p = 0.04) TSB increase > 102 micromol/L (p = 0.002) *Interventions* Inpatient phototherapy (p <0.001) Intravenous fluids after qualifying TSB	Nested case-control study Cases and controls taken from comparable populations with well defined exclusion criteria Confounding variables controlled Methodology described adequately

		<u>Controls:</u> Randomly selected sample of babies with maximum TSB levels < 427 micromol/L after the qualifying TSB (4 controls per case, n = 248) Mean BW: 3414 + 576 grams Mean GA: 37.9 + 1.4 weeks Mean age at entry: 73.1 + 17.5 hours Gender: Males = 61.3% Ethnicity: asian = 29.8% black = 6.8% Exclusion criteria: infants with resolving jaundice, those where TSB levels not documented after a maximum TSB recording or decline in TSB not recorded, and those with conjugated bilirubin level = 2 MG/DL		(p = 0.002) exclusive breastfeeding after qualifying TSB (p = 0.005) <u>2) Factors independently associated with severe hyperbilirubinaemia from multivariate regression analysis (adj OR with 95%CI)</u> GA (compared to 40 weeks as reference) For 38-39 weeks: 3.1 (1.2-8.0); p = 0.02 For 34-37 weeks: 3.7 (0.6-22.7); p = 0.15 Family history of jaundice: 3.8 (0.9-15.7): p = 0.06 Bruising on examination: 2.4 (1.2-4.8); p = 0.02 Exclusive breastfeeding after qualifying TSB: 2.0 (1.03-4.0); p = 0.04 TSB increase of = 102 micromol/day: 2.5 (1.2-5.5); p = 0.02 <u>Accuracy of risk factor model in predicting severe hyperbilirubinaemia</u>	

				c-statistic 0.82 (0.76 to 0.88)	
Keren R et al; Year: 2005 Country: USA 12	Study Type: Retrospective cohort Evidence Level: II	Infants with BW = 2000 grams if GA = 36 weeks and BW = 2500 grams if GA = 35 weeks participating in the hospital's early discharge programme, and who had both pre and post-discharge TSB levels measured at the phase when > 75% babies had both the samples (n = 899) Group 1: infants with post-discharge TSB > 95th centile on nomogram N = 98 mean BW: 3.4 + 0.5 kg mean GA: Not reported Gender: males = 54.1% Ethnicity: White = 45.9% Black = 31.6% Asian = 10.2%	1) Association of risk factors with significant hyperbilirubinaemia derived from univariate analysis (at p<0.2) 2) Multivariate regression analysis used to find factors independently associated with significant hyperbilirubinaemia To calculate risk, birthweight (kg) was transformed by subtracting 2 kg and dividing by 0.5 kg for every 0.5 kg above 2.5 kg 3) Comparison of diagnostic accuracy of the risk factor score (derived from regression modeling) with that of pre-discharge TSB levels in predicting significant hyperbilirubinaemia Pre-discharge TSB levels expressed as risk zone on an	Prevalence of significant hyperbilirubinaemia 98/899 (10.9%) 1) Factors associated with significant hyperbilirubinaemia *Increased risk* GA < 38 weeks (p = 0.02) GA > 40 weeks (p = 0.12) LGA babies (p = 0.13) higher pre-discharge TSB risk zone > 76th centile (p < 0.001) breastfeeding (p < 0.001) combined breast and bottle feeding (p = 0.02) maternal diabetes (p = 0.17) vacuum extraction (p < 0.001)	Retrospective cohort study Unselected population with well defined exclusion criteria Confounding variables controlled Methodology described adequately Blinding – not specified

		Hispanic = 3.1% Other = 8.2% <u>Group 2</u>: infants with post-discharge TSB < 95th centile on nomogram N = 801 mean BW 3.3 $\pm$ 0.5 kg mean GA: Not reported Gender: males = 52.2% Ethnicity: White = 43.1% Black = 39.9% Asian = 7.7% Hispanic = 4.5% Other = 4.7% Exclusion: admission and	hour-specific bilirubin nomogram (High risk > 95th centile, High intermediate risk 76th – 95th centile, Low intermediate risk 40th – 75th centile, Low risk 0 – 40th centile) Significant Hyperbilirubinaemia defined as TSB level > 95th centile on hour-specific nomogram.	prolonged rupture (p = 0.08) oxytocin use (p = 0.002) *Decreased risk* SGA (p = 0.04) Parity (p = 0.03) caesarean section (p = 0.18) <u>2) Factors independently associated with significant hyperbilirubinaemia from multivariate regression analysis (OR with 95%CI)</u> Birthweight: 1.5 (1.2-1.9); p = 0.001 GA < 38 weeks: 2.6 (1.5-4.5); p = 0.001 Oxytocin: 2.0 (1.2-3.4); p = 0.005 Vacuum delivery: 2.2 (1.5-3.6); p = 0.003 Exclusive breastfeeding: 2.6 (1.5-4.5); p<0.001 Breast and bottle feeding: 2.3 (1.1-4.9); p = 0.03 <u>Clinical risk index scoring</u>	

		treatment in intensive care nursery for neonatal illness and babies requiring phototherapy during birth hospitalization.		Birthweight: 3 points for 2501-3000 grams 6 for 3001-3500 grams 9 for 3501-4000 grams 12 for 4001-4500 grams 15 for 4501-5000 grams GA < 38 weeks: 5 points Oxytocin: 4 points Vacuum delivery: 4 points Exclusive breastfeeding: 5 points Breast and bottle feeding: 4 points <u>3) Predictive accuracy for predicting significant hyperbilirubinaemia</u> RISK FACTOR SCORE c-statistic 0.71 (0.66-0.76) *Risk index score 0-7*	

				+LR: 0.1 *Risk index score 8-11* +LR: 0.4 *Risk index score 12-15* +LR: 0.9 *Risk index score 16-19* +LR: 2.0 *Risk index score 20-23* +LR: 2.6 *Risk index score > 24* +LR: 3.2 PRE-DISCHARGE TSB c-statistic 0.83 (0.80-0.86) *TSB centile 0-40th* +LR: 0.05 *TSB centile 41-75th* +LR: 0.2	

				TSB centile 76-95th +LR: 2.2 *TSB centile > 95th* +LR: 9.4	

Seidman DS et al; Year: 1999 Country: Israel [13]	Study Type: Prospective cohort study Evidence Level: II	Healthy full term infants with GA = 37 weeks born at two hospitals N = 1177 mean BW 3247 ± 453 grams mean GA 39.8 ± 1.3 weeks Gender: Males = 47.3% Ethnicity: Not reported Exclusion: ABO or Rh incompatibility and a positive direct Coombs' test G-6PD deficiency.	1) Association of various factors with jaundice derived from multiple regression analysis 2) Comparison of diagnostic accuracy of various tests for predicting hyperbilirubinaemia <u>Test:</u> TSB measured within first 8 to 24 hrs of life and repeated daily for the next 4 days <u>Reference standard:</u> Hyperbilirubinaemia defined as TSB >171 micromol/L at day 2 >239 micromol/L at day 3 >291 micromol/L at day 4-5 <u>Analysis:</u> Association between various factors and jaundice calculated from multiple regression analysis using Odds ratios with 95%CI, and these factors used for modelling in predicting hyperbilirubinaemia	<u>1) Factors associated with jaundice after comparing Group 1 vs. Group 2 (n = 1,177)</u> *Day 1 TSB (per 17 micromol/L)* OR: 3.1 (95%CI 2.4 to 4.1) *Change in TSB from day 1 to day 2 (per 17 micromol/L)* OR: 2.4 (95%CI 1.9 to 3.0) *Maternal age (per year)* OR: 1.1 (95%CI 1.0 to 1.2) *Mat education (per year)* OR: 0.8 (95%CI 0.7 to 0.9) *Maternal blood type O* OR: 2.9 (95%CI 1.5 to 5.8) *Full breastfeeding* OR: 0.4 (95%CI 0.2 to 0.9) *Day 1 TSB > 85 micromol/L* OR: 36.5 (95%CI 15.9 to 83.6)	Unselected population No differences at baseline between the two groups Test & Reference test described in detail Reference test a standard one Blinding – Not reported Confounding factors adjusted for during modelling Data not available to calculate PPV or NPV. Raw figures not available

Keren R et al; Year: 2008 Country: USA [14]	Study Type: Prospective cohort study Evidence Level: II	Infants managed exclusively in the well infants nursery of an urban tertiary care hospital with GA = 36 weeks and BW = 2000 grams or GA = 35 weeks and BW = 2500 grams N = 812 mean BW 3.3 ± 0.5 kg GA < 38 weeks: 13.4% Gender: males = 49.4% Ethnicity: White = 33.5% Black = 53.2% Asian = 9.8% Other = 3.4% Since the population in the area was predominantly black, stratified sampling scheme used to get a representative sample. <u>Group 1:</u> Infants with significant hyperbilirubinaemia (N = 48)	1) Factors associated with significant hyperbilirubinaemia in univariate analysis entered into regression modeling for clinical risk factor model 2) Comparison of diagnostic accuracy of three tests in predicting significant hyperbilirubinaemia by the c-statistic (mathematically equal to area under ROC curve) <u>Test 1:</u> Pre-discharge bilirubin measured either by TcB or TSB at < 52 hrs of age, and expressed as risk-zone on hour specific nomogram. Daily TcB levels recorded using BiliChek, and TSB performed if TcB above 75^{th} centile on hour-specific nomogram or TcB reading = 205 micromol/L TSB value taken for analysis when both TcB and TSB done. <u>Test 2:</u> Clinical risk factors assessed by	<u>Prevalence of significant hyperbilirubinaemia</u> 48/751 (6.4%) – 61 had an incomplete follow-up <u>1) Association of factors with significant hyperbilirubinaemia (Univariate analysis) (n = 812)</u> *Factors increasing risk* Pre-discharge bilirubin – high risk zone OR: 147 (95%CI 34-639) high-intermediate risk zone OR: 21 (95%CI 4.9-93.0) GA < 38 weeks OR: 9.2 (95%CI 4.4-19.0) intended breastfeeding OR: 2.2 (95%CI 1.0-4.5) intended breast + bottle feeds OR: 3.7 (95%CI 1.6-8.6) Grade 4 or higher degree of clinical jaundice OR 6.0 (95%CI 2.1 to 17)	Unselected population (stratified sampling) with well defined exclusion criteria Baseline characteristics of two groups not compared Confounding variables controlled Methodology described adequately Blinding – not specified

		Group 2: Infants without significant hyperbilirubinaemia (N = 703) Exclusion: babies transferred to the intensive care nursery for any reason Babies who received intravenous antibiotics for concern for sepsis.	review of hospital charts for maternal race, intended method of feeding, GA, history of previous infant with jaundice, clinical assessment of jaundice, G-6PD deficiency. Test 3: Combination of pre-discharge bilirubin risk zone and clinical risk factors. Reference standard: Bilirubin levels (TcB or TSB) measured on day 3-5 on both hospitalized and discharged babies (at home) using similar method as in Test 1, and Significant Hyperbilirubinaemia defined as bilirubin levels exceeding or within 17 micromol/L of the hour-specific phototherapy treatment thresholds.	*Factors decreasing risk* Black race OR 0.43)95%CI 0.23-0.80) Maternal history of smoking OR: Not reported Factors significant in multivariate analysis model (p<0.05) GA<38 weeks OR 19 (95%CI 6.3- 56) Mother's plan of exclusive breastfeeding: OR 3.7 (95%CI 1.1- 13) Black race: OR 0.22 (95%CI 0.08- 0.61) Grade 4 or higher jaundice observed clinically: OR 1.7 (95%CI 1.2-2.6) Female sex: OR 3.2 (95%CI 1.2-8.4) 2) Predictive ability of the three tests in predicting significant hyperbilirubinaemia (multivariate regression) *Test 1: Pre-discharge bilirubin risk zone* c-statistic 0.88 (95% 0.85 to 0.91)	

				Test 2: Clinical risk factors (final model had 5 factors – GA, intended method of feeding, black race, extent of jaundice and gender) c-statistic 0.91 (95% 0.86 to 0.97) *Test 3: Combination model (pre-discharge risk zone + clinical factors of GA and % weight loss)* c-statistic 0.96 (95% 0.93 to 0.98) *Test 3 vs. Test 1* p-value for difference< 0.01 *Test 3 vs. Test 2* p-value for difference = 0.15 *Test 2 vs. Test 1* p-value for difference = 0.35	
Gale R;	Study Type: Nested case-control study	Term babies > 37 weeks delivered during a 5 year period in a university hospital (n =	1) Association of various factors with high serum bilirubin levels by comparing test group with comparison	<u>1) Factors associated high bilirubin levels (at p<0.01 during univariate analysis)</u>	Cases and controls taken from comparable populations with exclusion criteria not well defined Confounding

Year: 1990 Country: Israel 15	Evidence Level: II	10,122) <u>Test group</u>: Term babies who developed serum bilirubin levels = 221 micromol/L N = 1154 mean BW 3192 <u>+</u> 508 grams mean GA 39.3 <u>+</u> 1.5 weeks Gender: Not reported Ethnicity: Not reported <u>Comparison group:</u> every tenth admission randomly selected from the group of with serum bilirubin levels < 221 micromol/L N = 1154 mean BW 3257 <u>+</u> 444 grams mean GA 39.9 <u>+</u> 1.35 weeks Gender: Not reported Ethnicity: Not reported	group (univariate analysis) 2) Step-wise regression analysis done to control for confounding variables	Male sex (p =0.001) maternal diabetes (p = 0.01) maternal PIH (p = 0.005) previous sibling with hyperbilirubinaemia (p < 0.001) delivery by caesarean section (p < 0.001) vacuum or forceps delivery (p < 0.001) epidural anaesthesia (p = 0.001) mother with blood type O (p < 0.001) first delivery (p < 0.001) cephalohaematoma (p = 0.003) short gestation (p = 0.01) lower birth weight (p = 0.01) lower birth order (p = 0.01) <u>2) Factors independently associated with high TSB levels (adj OR with 95%CI)</u> Maternal age > 35 years: Adj OR 1.7 (95%CI 1.3-2.3)	variables controlled Methodology not described adequately Blinding – not specified

		Exclusion: Not defined		Male sex: Adj OR 1.4 (95%CI 1.2-1.7) Primipara: Adj OR2.7 (95%CI 2.1-3.5) Previous sibling with jaundice: Adj OR 2.3 (95%CI 1.9-2.8) Early gestation (with 40 weeks as reference): For 37 weeks Adj OR 4.5 (95%CI 3.2-6.3) For 38 weeks Adj OR 2.1 (95%CI 1.6-2.8) Vacuum extraction: Adj OR 3.0 (95%CI 2.1-4.4)	
Khoury MJ et al; Year: 1988 Country: USA 16	Study type: Retrospective study Evidence level: II	Offspring of 1,669 male US Army veterans who entered the Army between 1965 and 1971 and who participated in a nationwide study of veterans' health (N = 3,301, 580 sib-ships with one sibling, 1,089 sib-ships with two or more siblings) Exclusion: babies who had a different mother's name from the rest of the sibling relationship (paternal half sibs),	1) Univariate analysis to find association of maternal and infant variables with hyperbilirubinaemia (peak TSB levels = 205 micromol/L) 2) Multiple logistic regression analysis to find factors independently associated with hyperbilirubinaemia 3) Recurrence risk of hyperbilirubinaemia by sibling order and degree of	Rate of hyperbilirubinaemia in first child of a sibling relationship 83/1669 (5.0%) 1) Association of factors with hyperbilirubinaemia Prematurity (GA<37 weeks) (OR 2.2) black race (OR 0.37)	Retrospective study Selected population with well defined exclusion criteria Confounding variables controlled Methodology not described adequately

		stillbirths, babies with records showing evidence of haemolytic disease of newborn.	hyperbilirubinaemia in the first child before and after controlling for confounding variables *TSB levels for degree of jaundice* Mild: = 205 micromol/L Moderate: 205 to 257 micromol/L Severe: = 257 micromol/L	breast-feeding (OR 2.1) neonatal asphyxia (OR 1.8) <u>2) Factors independently associated with hyperbilirubinaemia</u> Year of birth (after 1975 vs. before 1975): Adj OR1.49 (95%CI 1.03-2.15) Prematurity (GA<37weeks): Adj OR 2.4 (95%CI 1.4-3.9) Breastfeeding: Adj OR 1.9 (95%CI 1.3-2.7) 1-minute Apgar score: Adj OR1.7 (95%CI 1.0-2.9) <u>3) Risk of recurrence of hyperbilirubinaemia</u> *Unadjusted OR with 95%CI* 3.1 (1.4-6.8) *Adjusted OR with 95%CI* For Mild jaundice	

				2.7 (1.8-4.1) For Moderate jaundice 4.1 (1.5-10.8) For Severe jaundice 12.5 (2.3-65.3)	
Beal AC et al; Year: 2005 Country: USA [18]	Study type: Cross-sectional survey Evidence level: III	Mothers of babies with GA = 35 weeks discharged from well baby nursery of a health system organization during 22 month period (N = 866) Exclusion: BW<2000 grams, GA<35 weeks, babies who stayed = 3 days in an intensive care nursery, babies with TSB = 171 micromol/L in the first 24 hours.	Maternal and neonatal data extracted from the organization's database and maternal race categorized into 7 categories – American Indian, Asian, African American or black, Hispanic, Middle Eastern or Arabic, Caucasian or white, and Others Computerized telephonic survey conducted to collect further information from mothers about their experience of breastfeeding, neonatal care, hyperbilirubinaemia detection, interventions and education, and racial ancestry for mother, father and newborn (allowing	<u>Response rate</u> Total eligible = 3021 Contacted = 1248 Completed survey = 866 <u>Agreement between Medical record documented maternal race vs. Mother self-reported race</u> White: 64.1% Black: 69.6% Hispanic: 97%	Population not representative Poor response rate

			= 5 responses for ancestry of each)	Middle Eastern: 50% Asian: 35% American Indian: 0% Others: 4.3% Relationship between newborn's, mother's and father's first-named race for newborns reported to be = 2 races First-named race same for all = 40.9% Newborn and mother's race same = 22.6% Newborn and father's race same = 24.7% All 3 races different = 10.8%	
Murki S et al; Year: 2001 Country: India	Study type: Prospective study Evidence level: II	Term (37 completed weeks) neonates with severe non-haemolytic jaundice. The inclusion criteria were TSB > 308 micromol/L, absence of hemolysis absence of major	Diagnosis of haemolysis was based on positive direct Coomb's test, peripheral blood smear, reticulocyte count, plasma hemoglobin and packed cell volumes. Exchange transfusion was done whenever total serum	Baseline comparison of two groups (kernicterus vs. non-kernicterus group) Higher number of kernicterus infants delivered vaginally (93% vs. 74%, $p < 0.05$) oxytocin use was higher in non-kernicterus group (26% vs. 42%, p <	Selected population with small sample size Comparison of baseline characteristics done Methodology not clearly explained Confounding variables controlled (partially)

[20]		malformations. Kernicterus group: babies with stage II bilirubin encephalopathy characterized by presence of opisthotonus, rigidity and sun-setting of eyeballs N = 14 mean BW 2402 ± 525 grams mean GA 37.8 ± 0.8 weeks Gender: males = 71.4% Ethnicity: Not reported Non-kernicterus group: babies without features of bilirubin encephalopathy N = 50 mean BW 2654 ± 446 grams mean GA 38.1 ± 1.02 weeks Gender: males = 54% Ethnicity: Not reported	bilirubin level reached 342 micromol/L.	0.05) *Neonatal risk factors* No statistically significant difference (at p < 0.05) between the two groups for sex distribution mean gestational age mean birth weight % of small for date (SFD) history of birth asphyxia pH at admission weight loss *Laboratory parameters* Mean max TSB levels: Kernicterus: 542 ± 171 micromol/L Non-kernicterus: 438 ± 79 micromol/L p = 0.002	

				Free bilirubin levels: Kernicterus: 25.5 $\pm$ 10.1 nmol/L Non-kernicterus: 19.9 $\pm$ 6.9 nmol/L p = 0.006 Bilirubin/albumin ratio: Kernicterus: 0.14 $\pm$ 0.05 Non-kernicterus: 0.11 $\pm$ 0.03 p = 0.05 <u>Results from multiple logistic regression analysis</u> History of birth asphyxia: OR 8.3 (95%CI 1.2-111.8); p = 0.03 Maximum TSB levels: OR 1.15 (195%CI .04-1.3); p = 0.005 Free bilirubin levels: OR 1.1 (95%CI 1.04-2.2); p = 0.009	

Turkel BS et al; Year: 1980 Country: USA 21	Study type: Retrospective matched-control study Evidence level: II	All infants with kernicterus found at autopsy. 32 infants identified with kernicterus matched to 32 control infants without kernicterus at autopsy born during the same year, of like gestational age, weight and length of survival. A second group of 13 pairs from the large group of 32 pairs were matched for sex as well.	Multiple historical, clinical, and laboratory factors were compared, including therapy sepsis hypothermia asphyxia (Apgar score) haematocrit acidosis hypercarbia hypoxia hypoglycaemia hyperbilirubinaemia	There were no statistically significant differences between the kernicteric and non-kernicteric infants for any of the factors, including peak total serum bilirubin levels. The multivariate analysis failed to determine a group of factors associated with increased risk for kernicterus.	It was difficult to separate infants with and without kernicterus at autopsy on the basis of the clinical factors evaluated. Some cases of kernicterus may have been missed due to the variables of relying on identification in fixed or fresh brains.
Bhutani VK et al; Year:2006 Country: USA	Study Type: Retrospective study Evidence Level: III	125 of 142 cases of the Pilot Kernicterus Registry met the inclusion criteria. These babies were discharged as healthy and were included for analysis if they exhibited clinical signs of acute bilirubin encephalopathy regardless of total serum bilirubin levels.	Main outcome measures were the comparison of etiology, severity and duration of extreme hyperbilirubinaemia (total serum bilirubin levels >343 micromol/L), response to interventions of intensive phototherapy and	The total serum bilirubin levels, age at re-hospitalization, and birth weight distribution were similar for late preterm and term infants. Large for gestational age and late preterm infants disproportionately developed kernicterus as compared with those who were appropriate for	Late prematurity ($34^{0/7}$ to $36^{6/7}$ weeks) of healthy babies was not recognized as a risk factor for hazardous hyperbilirubinaemia by clinical practitioners.

22			exchange transfusion, health care delivery experiences in preterm as compared with term infants.	gestational age and term. Clinical management of extreme of hyperbilirubinaemia, by the attending clinical providers, was not impacted or influenced by the gestational age, clinical signs, or risk assessment. This resulted in severe posticteric sequelae which was more severe and frequent in late preterm infants.	
Newman T Year: 1993 Country: USA 23	Study Type: prospective cohort study Evidence Level: II	The study population included first born white and black babies with birth weight = 2500 grams who survived for at least 1 year and had at least one bilirubin level recorded N = 41,324 Mean BW: 3285 grams Mean GA: 39.3 $\pm$ 2.8 weeks Gender: males = 51.3% Ethnicity: White = 51.7% Black = 48.3%	Babies had TSB measured between 36 and 60 hours of age (as close to 48 hours as possible) and subsequent sampling was done depending on the initial levels Outcomes intelligence quotient (IQ) assessment by psychologists (using Wechsler Intelligence Scale for Children) at the age of 7 years, neurological examination by paediatric neurologists or specially trained paediatricians at the age of 7 years hearing evaluation performed at 8 years of age using pure-	About 1% of the white babies (N = 21,375) had peak TSB level = 342 micromol/L while the proportion among the black babies (N = 19,949) was 0.6%. No statistically significant association was seen between high TSB levels and IQ scores or sensorineural hearing loss. Abnormal neurological examination was reported more commonly in children with high TSB levels (= 342 micromol/L) compared to those with lower TSB levels, but the difference was statistically not significant (4.5% vs. 3.8%; RR 1.2, 95%CI 0.7-2.1).	Selected population Comparison of baseline characteristics done Confounding variables controlled Partially blinded (some tests)

		Exclusion criteria: Non-singleton babies Birthweight < 2500 or birthweight unknown	tone audiometry Multiple logistic regression analysis was performed to control for the effect of 11 potential confounding variables	However it was observed that there was a significant linear increase in the risk of 'suspicious' abnormal neurological examination with an increase in the TSB levels (OR 1.12, 95%CI 1.06- 1.2).	
Boo NY et al; Year:1994 Country: Malaysia 24	Study Type: Cohort study Evidence Level: II	136 jaundiced term neonates. N = 128 Mean BW: 3022 + 474 grams Mean GA: 39.8 + 0.7 weeks Gender: males = 62.5% Ethnicity: Malays = 50.8% Chinese = 35.9% Indian = 10.9% Others = 2.3% 8 babies were excluded due to aminoglycoside treatment and congenital anomalies	Hearing loss was based on brain stem-evoked response. Hyperbilirubinaemia defined as TSB > 340 micromol/L	Hearing loss: 28/128 (21.8%) Hearing loss: TSB < 340 micromol/l 13/83 (15.7%) TSB > 339 micromol/l 15/45 (33.3%) p = 0.11 <u>Risk factors for hearing loss</u> Severe jaundice which required exchange transfusion (p = 0.038) Earlier age of onset of hyperbilirubinaemia (p = 0.012)	

Oh W et al; Year:2003 Country: USA 25	Study Type: Retrospective cohort study Evidence Level: II	Extremely low birth weight infants (401–1000 grams) who survived to 14 days of age N = 5,630 mean BW: 789 + 136 grams mean GA: 26.2 + 2.1 weeks Gender: Not reported Ethnicity: Not reported Peak bilirubin levels that were recorded beyond the first 14 days of life were excluded.	Demographic and clinical risk factors and serum bilirubin levels during the first 14 days were analyzed with reference to death or adverse neurodevelopmental outcomes at 18 to 22 months' postmenstrual age. Neurodevelopmental variables were Psychomotor Developmental Index (PDI) <70 Mental Developmental Index (MDI) <70 moderate or severe cerebral palsy (CP) hearing impairment (hearing aids), composite category designated as neuro-developmental impairment (NDI).	3,246 infants survived at discharge, 79 died after discharge, and 592 were lost to follow-up. 2575 of 3167 infants were seen in the follow-up clinics with a compliance rate of 81%. Logistic regression analysis showed that various demographic and clinical variables were associated with poor neurodevelopmental outcomes. After adjustment for these risk factor, significant association were found between peak TSB and death or NDI - OR 1.068 (95%CI 1.03–1.11) PDI <70 - OR1.057 (95%CI 1.00-1.12) hearing impairment requiring hearing aids OR 1138 (95%CI 1.00–1.30) There was no significant association	PSB concentrations during the first 2weeks of life are directly correlated with death or NDI, hearing impairment, and PDI <70 in ELBW infants.

			The NDI is defined as infants with any 1 or more of the following: PDI <70, MDI <70, moderate to severe CP bilateral blindness, bilateral hearing impairment requiring amplification.	between peak TSB and other variables	
Maisels MJ et al; Year:2009 Country: USA 17	Study Type: Retrospective nested- case-control study Evidence Level: II	From a cohort of 11,456 infants, 75 infants who following discharge, had been readmitted with hyperbilirubinaemia (TSB > 291 micromol/L) were compared with 75 matched controls. Hyperbilirubinaemia group N = 75 mean BW: Not reported mean GA: Not reported Gender: Males 59%	Demographic and clinical risk factors and serum bilirubin levels were analyzed in terms of readmittance for hyperbilirubinaemia Factors include Maternal age Gestational age Ethnicity Mode of delivery	11.456 infants survived at discharge, 75 were readmitted with TSB > 291 micromol/L. The stepwise logistic regression analysis showed that various demographic and clinical variables were associated with readmission for hyperbilirubinaemia After adjustment for these risk factor, significant association were found between TSB > 291 micromol/L and Gestation age	

		Ethnicity: White: 77% Asian: 12% Black: 1% Other: 10% Control group N = 75 mean BW: Not reported mean GA: Not reported Gender: Males 52% Ethnicity: White: 81% Asian: 7% Black: 7% Other: 5% Babies who received phototherapy prior to discharge were excluded .	Gender Feeding TCB percentile Bruising/cephalohaematoma Jaundice in 1st 24 hours Length of stay after birth .	35 – 36 6/7 weeks Adj OR 20.79 2.34, 184.74) 37 – 27 6/7 weeks Adj OR 14.86 (1.91, 115.38) Feeding Breast only adj OR 10.75 (2.37, 48.82) TCB > 95%centile Adj OR 149.89 (20.41, >999.99) There was no significant association between peak TSB and other variables	

How useful are the following tests in predicting neonatal hyperbilirubinaemia?

Prediction of hyperbilirubinaemia (diagnostic accuracy)

Bibliographic details	Study type & Evidence level	Patient characteristics	Test, Reference Standard, Threshold for a positive test	Results	Reviewers Comments
Knupfer M; Year: 2005 Country: Germany [27]	Study Type: Diagnostic study Evidence Level: II	Healthy babies with GA > 34 weeks cared for in a maternity ward of a University hospital. The study population divided into 3 groups: **Group 1: Term AGA** N = 1100 mean GA 39.6 ± 1.1 weeks mean BW 3562 ± 418 grams Gender: Not reported Ethnicity: Not reported **Group 2: Term SGA** N = 163 mean GA 39.4 ± 1.2 weeks mean BW 2683 ± 274 grams	Test: Umbilical cord bilirubin (UCB) measured within 2 hrs of storage in amber Threshold values < 20 micromol/L 20-30 micromol/L 30-40 micromol/L > 40 micromol/L Reference standard: TcB from forehead every morning for 4 days and laboratory TSB performed if TcB index > 16.	Mean UCB (micromol/L) Group 1: 32.4 ± 9.2 Group 2: 31.7 ± 9.1 Group 3: 30.9 ± 6.7 Comparison of prevalence of hyperbilirubinaemia in Group 1, 2 and 3 (in %) *With TSB > 250 micromol/L* 10.6 vs. 9.8 vs. 25.6 *With TSB > 300 micromol/L* 3.0 vs. 3.1 vs. 6.4	Unselected population Test and Reference described adequately Reference test a standard one Blinding – Not reported

		Gender: Not reported Ethnicity: Not reported **Group 3: Preterm** N = 78 mean GA 35.3 ± 0.8 weeks mean BW 2578 ± 437 grams Gender: Not reported Ethnicity: Not reported Exclusion: discharge before 4th postnatal day, significant illness followed by special therapy such as antibiotics, CPAP or artificial ventilation	Diagnostic accuracy also calculated for predicting TSB levels requiring phototherapy	*Treated with phototherapy* 3.4 vs. 10.4 vs. 47.7 <u>Diagnostic accuracy of UCB (threshold > 30 micromol/L) in predicting TSB > 300 micromol/L</u> **Group 1:** Prevalence: 33/1100 (3.0%) Sensitivity: 32/33 (97%) Specificity: 442/1067 (41.4%) PPV: 32/657 (4.9%) NPV: 442/443 (99.8%) **Group 2:** Prevalence: 5/163 (3.1%) Sensitivity: 5/5 (100%) Specificity: 70/158 (44.3%) PPV: 5/93 (5.4%) NPV: 70/70 (100%) **Group 3:**	

				Prevalence: 5/78 (6.4%) Sensitivity: 5/5 (100%) Specificity: 32/73 (43.8%) PPV: 5/46 (10.9%) NPV: 32/32 (100%) <u>Diagnostic accuracy of UCB (threshold > 30 micromol/L) in predicting need for phototherapy</u> **Group 1:** Prevalence: 40/1100 (3.6%) Sensitivity: 36/40 (90%) Specificity: 439/1060 (41.4%) PPV: 36/657 (5.5%) NPV: 439/443 (99.1%) **Group 2:** Prevalence: 17/163 (10.4%) Sensitivity: 16/17 (94.1%) Specificity: 69/146 (47.3%) PPV: 16/93 (17.2%) NPV: 69/70 (98.6%)	

				Group 3: Prevalence: 37/78 (47.4%) Sensitivity: 26/37 (70.3%) Specificity: 21/41 (51.2%) PPV: 26/46 (56.5%) NPV: 21/32 (65.6%)	
Taksande A; Year: 2005 Country: India 28	Study Type: Diagnostic study Evidence Level: II	Healthy full term babies born in the hospital with GA > 37 weeks and absence of significant illness requiring NICU admission and any congenital malformation. N = 200 mean GA 38.9 ± 2.07 weeks mean BW 2555 ± 442 grams Gender: Males = 41% Ethnicity: Not reported Exclusion: babies with ABO or Rh incompatibility,	Test: Umbilical cord bilirubin (UCB) measured at birth Threshold value > 34 micromol/L Reference standard: Laboratory TSB measured after 72 hours TSB > 290 micromol/L taken as hyperbilirubinaemia	Diagnostic accuracy of UCB (threshold value > 2 mg% or 34 micromol/L) for predicting TSB > 17 mg% or 290 micromol/L Prevalence: 19/200 (9.5%) Sensitivity: 17/19 (89.5%) Specificity: 154/181 (85.1%) PPV: 17/44 (38.6%) NPV: 154/156 (98.7%)	Unselected population Test & Reference test not described in detail Reference test is a standard one Blinding – yes

		G-6PD deficiency, those who later developed significant illness requiring NICU admission.			
Knudsen A; Year: 1992 Country: Denmark 29	Study Type: Diagnostic study Evidence Level: II	Healthy term babies admitted to the newborn nursery. N = 138 median GA 40 weeks - range 38 to 43 median BW 3495 grams - range 2571 to 4456 Gender: Males = 52.2% Ethnicity: Not reported Exclusion: premature babies, sick babies rhesus sensitization.	Test: Umbilical cord bilirubin (UCB) measured at birth Threshold values: $\geq$ 20 micromol/L $\geq$ 25 micromol/L $\geq$ 30 micromol/L $\geq$ 35 micromol/L $\geq$ 40 micromol/L Reference standard: Laboratory TSB measured on Day 3 TSB $\geq$ 200 micromol/L taken as value for hyperbilirubinaemia ROC curve used to find the best	Diagnostic accuracy of UCB (threshold value > 35 micromol/L) for predicting TSB > 200 micromol/L Prevalence: 28/138 (20.3%) Sensitivity: 20/28 (71.4%) Specificity: 75/110 (68.2%) PPV: 20/55 (36.4%) NPV: 75/83 (90.4%)	Unselected population Test & Reference test described in detail Reference test is a standard one Blinding – Not reported. Reported using Minolta JM to estimate TcB but no details given

			cut-off value of UCB.		
Carbonell X; Year: 2001 Country: Spain 30	Study Type: Diagnostic study Evidence Level: II	Healthy term babies N = 2004 – 610 in phase one + 1394 in phase 2, mean BW 3230 + 491 grams mean GA 39 weeks Gender: Males = 50.7% Ethnicity Not reported In first phase (N = 610), cord bilirubin (UCB) at birth and TcB with Minolta JM-102 measured at 24hrs, 48 hrs & 60-96 hrs of life. Additionally TSB done for all at 60-96 hrs. On 169 babies TSB also measured at 24 & 48hrs In second phase (N = 1394), TcB and lab TSB values obtained to find accuracy of TSB and TcB at 24hrs and 48 hrs to predict hyperbilirubinaemia.	Test: 1. Umbilical cord bilirubin (UCB) measured at birth (threshold value: > 37 micromol/L) ROC curve used to find the best cut-off value of UCB. 2. TSB (in phase 1 & 2) and TcB (phase 1 only) measured at 24 hrs (threshold value for TSB = 102 micromol/L and for TcB > 11) 3. TSB and TcB (in phase 1 & 2) measured at 48 hrs (threshold value for TSB = 154 micromol/L and for TcB > 13) TcB reading using Minolta JM 102 at the forehead and the sternum (mean of 3 measurements recorded at each site used for analysis)	Correlation of TcB levels with lab TSB levels for Sternal vs. Forehead site (Pearson correlation coefficient) At < 24 hrs (N = 120) *Sternum Forehead* 0.81 0.77 At 24-48 hrs (N = 126) *Sternum Forehead* 0.89 0.83 At > 48 hrs (N = 412) *Sternum Forehead* 0.94 0.83 Diagnostic accuracy of TcB for detecting TSB > 222 micromol/L	Unselected population but no exclusion criterion Test & Reference test described in detail Reference test a standard one Test and reference test carried out within one hour Blinding – Not reported

		Prevalence of TSB > 290 micromol/L = 2.9% in phase 1 (18/610) and 3.25% in phase 2 (46/1324) Exclusion: not defined	Reference standard: Laboratory TSB measured on Day 3-4 TSB = 290 micromol/L taken as indicative of hyperbilirubinaemia	Sensitivity: 98% Specificity: 72% Diagnostic accuracy for predicting TSB = 290 micromol/L *Prevalence of TSB = 290 micromol/L* 2.9% in phase 1 (18/610) and 3.25% in phase 2 (46/1324) **1. For UCB (threshold = 37 micromol/L)** Sensitivity: 4/18 (22.2%) Specificity: 537/567 (94.7%) **2. At 24 hours** *For TcB in phase 1 (threshold > 11 Reflectance Units)* Sensitivity: 15/18 (83.3%) Specificity: 368/556 (66.2%) PPV: 15/203 (7.4%) NPV: 368/371 (99.2%) *For TSB in phase 1 (threshold = 102*	

				micromol/L) Sensitivity: 7/7 (100%) Specificity: 74/162 (45.7%) PPV: 7/95 (7.4%) NPV:74/74 (100%) *For TSB in phase 2 (threshold = 102 micromol/L)* Sensitivity: 25/25 (100%) Specificity: 239/398 (60%) PPV: 25/95 (26.3%) NPV: 239/239 (100%) **2. At 48 hours** *For TcB in phase 1 (threshold > 13 reflectance units)* Sensitivity: 17/18 (94.4%) Specificity: 288/556 (51.7%) PPV: 17/285 (5.9%) NPV: 288/289 (99.6%) *For TcB in phase 2 (threshold > 13*	

				reflectance units) Sensitivity: 45/46 (97.8%) Specificity: 262/819 (32.0%) PPV: 45/602 (7.5%) NPV: 262/263 (99.6%) *For TSB in phase 1 (threshold = 154 micromol/L)* Sensitivity: 11/11 (100%) Specificity: 102/158 (64.6%) PPV: 11/67 (16.4%) NPV: 101/102 (100%) *For TSB in phase 2 (threshold = 154 micromol/L)* Sensitivity: 45/46 (97.8%) Specificity: 348/774 (45%) PPV: 45/471 (9.5%) NPV: 348/349 (99.7%)	
Agarwal R;	Study Type: Diagnostic study	All infants with GA > 35 weeks with no significant illness requiring NICU admission for > 12 hours, absence	Test: TSB at 24 $\pm$ 6 hrs after birth – three samples taken and mean	Diagnostic accuracy of TSB (threshold value > 102 micromol/L) for predicting TSB = 290 micromol/L (N = 213)	Unselected population Test & Reference test

Year: 2002 Country: India 31	Evidence Level: 1b	of any major congenital malformations and residing near hospital whose parents agreed to come for follow-up. N = 220 mean GA 38 ± 1.4 weeks mean BW 2827 ± 459 grams Gender: Males = 53.3% Ethnicity: Not reported Exclusion: babies requiring NICU admission, Rh hemolysis.	of two closest values taken for analysis Threshold value: > 102 micromol/L <u>Reference standard:</u> Laboratory TSB measured on Day 5 when clinical jaundice > 171 micromol/L TSB ≥ 290 micromol/L taken as indicative of hyperbilirubinaemia	Prevalence: 22/213 (10.3%) Sensitivity: 21/22 (95.4%) Specificity: 135/191 (70.7%) PPV: 21/77 (27,3%) NPV: 135/136 (99.3%)	described in detail Reference test a standard one Blinding – yes
Alpay F; Year: 2000 Country: Turkey	Study Type: Diagnostic study Evidence Level: II	All healthy full term newborn babies with GA = 38 weeks. N = 498 mean GA Not reported mean BW Not reported Gender: Not reported	<u>Test:</u> TSB within first 24 hrs (mean 17.1 hrs) ROC curve used for threshold value with highest sensitivity for predicting hyperbilirubinaemia (threshold value: = 102 micromol/L)	<u>Diagnostic accuracy of TSB for predicting TSB = 290 micromol/L (N = 498)</u> *Threshold value = 102 micromol/L* Prevalence: 60/498 (12.0%) Sensitivity: 54/60 (90%) Specificity: 286/438 (65.3%)	Unselected population Test & Reference test described in detail Reference test a standard one Blinding – Not reported

32		Ethnicity: Not reported Exclusion: babies with blood groups A, AB, B and O / Rhesus blood factor incompatibility and a positive direct antiglobulin test result G-6PD deficiency	Results also given for threshold values = 120 micromol/L and = 137 micromol/L <u>Reference standard:</u> Laboratory TSB measured at 24 hrs interval for next 4 days TSB = 290 micromol/L till Day 5 taken as indicative of hyperbilirubinaemia	PPV: 54/206 (26.2%) NPV: 286/292 (97.9%) *Threshold value = 120 micromol/L* Sensitivity: 36/60 (60%) Specificity: 363/438 (82.9%) PPV: 36/111 (32.4%) NPV: 363/387 (97.8%) *Threshold value = 137 micromol/L* Sensitivity: 21/60 (35%) Specificity: 413/438 (94.3%) PPV: 21/46 (45.6%) NPV: 413/452 (91.4%)	
Seidman DS; Year: 1999 Country: Israel	Study Type: Diagnostic study Evidence Level: II	Healthy full term infants with GA = 37 weeks born at two hospitals N = 1177 mean BW 3247 ± 453 grams mean GA 39.8 ± 1.3 weeks	1) Association of various factors with jaundice derived from multiple regression analysis 2) Comparison of diagnostic accuracy of various tests for predicting hyperbilirubinaemia	<u>Factors associated with jaundice after comparing Group 1 vs. Group 2 (N = 1177)</u> *Day 1 TSB (per 17 micromol/L)* OR: 3.1 (95%CI 2.4 to 4.1)	Unselected population No differences at baseline between the two groups Test & Reference test described in detail Reference test a standard

13		Gender: Males = 47.3% Ethnicity: Not reported Exclusion: ABO or Rh incompatibility and a positive direct Coombs' test G-6PD deficiency.	<u>Test:</u> TSB measured within first 8 to 24 hrs of life and repeated daily for the next 4 days <u>Reference standard:</u> Hyperbilirubinaemia defined as TSB >171 micromol/L at day 2 >239 micromol/L at day 3 >291 micromol/L at day 4-5 <u>Analysis:</u> Association between various factors and jaundice calculated from multiple regression analysis using Odds ratios with 95%CI, and these factors used for modelling in predicting hyperbilirubinaemia	*Change in TSB from day 1 to day 2 (per 17 micromol/L)* OR: 2.4 (95%CI 1.9 to 3.0) *Maternal age (per year)* OR: 1.1 (95%CI 1.0 to 1.2) *Mat education (per year)* OR: 0.8 (95%CI 0.7 to 0.9) *Maternal blood type O* OR: 2.9 (95%CI 1.5 to 5.8) *Full breastfeeding* OR: 0.4 (95%CI 0.2 to 0.9) *Day 1 TSB > 85 micromol/L* OR: 36.5 (95%CI 15.9 to 83.6) <u>Prediction of hyperbilirubinaemia</u> *Prediction by Day 1 TSB only (threshold*	one Blinding – Not reported Confounding factors adjusted for during modelling Data not available to calculate PPV or NPV. Raw figures not available

				value > 85 micromol/L*)* Sensitivity: 63.1% Specificity: 94.2% *Prediction by all model variables without Day 1 TSB* Sensitivity: 57.9% Specificity: 90.4% *Prediction by all model variables* Sensitivity: 81.8% Specificity: 82.9%	
Stevenson DK; Year: 2001 Country: USA [34]	Study Type: Diagnostic study/cohort Evidence Level: II	Newborns with GA = 35 weeks as determined by best obstetric estimate and enrolled serially from 9 clinical sites (4 domestic and 5 international) within the first 36 hours of life. N = 1895 Mean BW: Not reported	<u>Test:</u> 1. End-tidal CO measurement corrected for inhaled CO (ETCOc) at 30 ± 6 hrs (threshold value: value > population mean) 2. TSB at 30 ± 6 hrs (threshold value: TSB = 75th centile)	<u>Prevalence of hyperbilirubinaemia at 30 ± 6 hrs and 96 ± 12 hrs</u> 120/1370 (8.8%) <u>Comparison of ETCOc levels between Group 1 vs. Group 2 (mean ± SD)</u> 1.45 ± 0.47 ppm vs. 1.81 ± 0.59 ppm (p<0.001)	Unselected population Baseline data presented for total group (1370 (72.3%) completed the study) Test & Reference test

		Mean GA: Not reported Gender: Males = 49% Ethnicity: Asian/Pacific Islander = 38.9% White = 33.1% Black = 16.4% Hispanic = 3.9% Other = 7.7% Exclusion: babies requiring admission to NICU, severe congenital anomalies, babies in incubators, pulmonary disease requiring oxygen or any form of ventilatory support, with BW < 850 grams, and respiratory rates = 10 or = 100 breaths/min. Babies with age-specific TSB = 95^{th} centile either at < 24 hrs, at 30 ± 6 hrs, at 24-84 hrs or at 96 ± 12 hrs	<u>Timing of various TSB measurements:</u> a) at 30 ± 6 hrs for all babies (Test) b) between 24 - 84 hrs only on clinical grounds c) at 96 ± 12 hrs for all babies d) till 168 hrs as per study protocol <u>Reference standard:</u> Lab TSB confirmed hyperbilirubinaemia Hyperbilirubinaemia was defined as Age-specific lab TSB = 95^{th} centile <u>Analysis:</u> Logistic regression analysis models performed for prediction of hyperbilirubinaemia with ETCOc and TSB at 30 ± 6 hrs using multiple variables (bruising, type of feeding, BW, race, maternal diabetes, type of labor, gender, infection, PIH, parity, maternal blood type and Rh status)	<u>Diagnostic accuracy of ETCOc, TSB and combined test in predicting</u> hyperbilirubinaemia - derived from ROC curves - (at 30 ± 6 hrs) *ETCOc (threshold > population mean)* Sensitivity: 92/120 (76.7%) Specificity: 635/1250 (50.8%) PPV: 92/707 (13.0%) NPV: 635/663 (95.8%) *TSB (threshold > 75^{th} centile) after excluding babies with TSB > 95^{th} centile at < 36 hours* PPV: 16.7% NPV: 98.1% *Combined test* PPV: 6.4% NPV: 99.0%	described in detail Reference test a standard one Blinding – Not reported Data not given for calculating TP, FP, FN, and TN. Confounding factors adjusted for during modelling

		exited the study after giving test samples. Also babies with TSB < 40^{th} centile at 96 ± 12 hrs exited.			
Okuyama H; Year: 2001 Country: Japan 36	Study Type: Diagnostic study Evidence Level: II	Full-term infants with GA = 37 weeks and BW = 2500 grams. N = 51 mean BW 3108 ± 327 grams, mean GA 39.3 ± 1.4 weeks Gender: Males = 51% Ethnicity: Not reported Exclusion: subjects with maternal smoking, infants of diabetic mother, haemolytic disease such as blood group incompatibilities, closed space haemorrhage, respiratory distress, polycythemia.	Test: End-tidal CO measurement corrected for inhaled CO (ETCOc) every 6 hrs during the first 72 hrs. (different threshold values at different age) Reference standard: TcB measured every 12 hrs during the first 5 days using JM-102, and serum TSB measured when TcB index = 22 reflectance units Hyperbilirubinaemia defined as TSB = 257 micromol/L ROC curve used for predicting hyperbilirubinaemia	Group 1 vs. Group 2 No statistical differences between the two groups for sex, GA, mode of delivery, Apgar score at 1 min, age at peak TcB, and feeding type. *ETOCc levels* At 6-36 hrs – No statistical difference At 42, 48, 54 and 66 hrs – levels significantly higher in Group 1 Diagnostic accuracy of ETCOc in predicting hyperbilirubinaemia *Threshold 1.6 ppm at 36hrs* Sensitivity: 5/7 (71.4%) Specificity: 27/44 (61.4%) PPV: 5/22 (22.7%) NPV: 27/29 (93.1%)	Unselected population but small sample size Test & Reference test described adequately Reference test a standard test but not done in all babies Blinding – Not reported

				Threshold 1.8 ppm at 42hrs Sensitivity: 6/7 (85.7%) Specificity: 35/44 (79.5%) PPV: 6/15 (40%) NPV: 35/36 (97.2%) *Threshold 1.8 ppm at 48hrs* Sensitivity: 6/7 (85.7%) Specificity: 32/44 (72.7%) PPV: 6/18 (33.3%) NPV: 32/33 (96.9%) *Threshold 1.8 ppm at 60hrs* Sensitivity: 6/7 (85.7%) Specificity: 29/44 (65.9%) PPV: 6/21 (28.6%) NPV: 29/33 (87.9%)	
Bhutani VK;	Study Type: Diagnostic study	Birth cohort Term (BW = 2000 grams for = 36 weeks) and near-term AGA (BW =	<u>Test:</u> Pre-discharge TSB characterized by postnatal age in hours and	<u>Prevalence of significant hyperbilirubinaemia</u>	Unselected population Test & Reference test

Year: 1999 Country: USA 35	Evidence Level: II	2500 grams for GA = 35 weeks) newborn babies in a tertiary hospital (N = 13,003) For nomogram N = 2,840 mean BW 3318 + 457 grams mean GA 38.7 + 1.3 weeks mean age for pre-discharge sampling 33.7 ± 14.6 hrs Gender: Males = 50.1% Ethnicity: White = 43.4% Black = 41.2% Hispanic = 3.6% Asian = 4.1% Other = 7.7% Exclusion: admission and treatment in intensive care nursery for neonatal	measured between 18-72 hrs Reference standard: Hour-specific nomogram or TSB centiles developed from pre and post-discharge TSB values. Post-discharge values obtained on clinical grounds from day 1-6. Data recorded in epochs of: 4 hrs for first 48 hrs, 12 hrs for 48-96 hrs, 24 hrs for age 5-7 days. Predictive ability of pre-discharge TSB levels (given as percentile tracks and risk zones) evaluated for subsequent Significant Hyperbilirubinaemia (defined as TSB level reaching into the high-risk zone or = 95th centile) Threshold zones: High risk zone above 95th percentile, High intermediate risk zone	*Including both pre and post-discharge TSB* 230/2840 (8.1%) *Post-discharge TSB only* 126/2840 (4.4%) Predictive ability of pre-discharge TSB percentile tracks as risk demarcators for subsequent hyperbilirubinaemia (N = 2840) *Pre-discharge TSB above 95th percentile (N = 172)* Sensitivity: 68/126 (54.0%) Specificity: 2610/2714 (96.2%) PPV: 68/172 (39.5%) NPV: 2610/2668 (97.8%) *Pre-discharge TSB above 75th percentile*	described adequately Reference test a standard test as nomogram developed from lab TSB values Blinding – Not reported

		illness, positive Coombs' test, TSB measured after initiation of phototherapy, babies requiring phototherapy before 60 hrs to control unexplained rapidly rising TSB levels.	between 75th and 95th centile, Low intermediate risk zone between 75th and 40th centile Low risk zone below 40th centile	*(N = 528)* Sensitivity: 114/126 (90.5%) Specificity: 2300/2714 (84.7%) PPV: 114/528 (21.6%) NPV: 2300/2312 (99.5%) *Pre-discharge TSB above 40th percentile (N = 1084)* Sensitivity: 126/126 (100%) Specificity: 1756/2714 (64.7%) PPV: 126/1084 (11.6%) NPV: 1756/1756 (100%) Likelihood ratio (LR) based on risk zones *High risk zone* +LR: 14.1 *Upper-intermediate risk zone* +LR: 3.2	

				Lower-intermediate risk zone +LR: 0.5 *Low risk zone* +LR: 0	
Romagnoli C; Year: 2005 Country: Italy 37	Study Type: Diagnostic study Evidence Level: II	Phase 1: Development of nomogram Full term AGA babies delivered by vaginal or caesarean section after uneventful pregnancy, without asphyxia and with no Rh or major ABO incompatibility. N = 438 mean BW 3389 + 668 grams mean GA 40 + 1.8 weeks Gender: Males = 51.6% Ethnicity: Not reported Exclusion: congenital anomalies,	Test: Laboratory TSB measured between 30-72 hrs on clinical suspicion (single measurement in all babies, two consecutive TSB determinations 12 hrs apart in 514/1244 babies in Hospital A and 175/498 babies in Hospital B) Reference standard: Hour-specific nomogram. TSB curves developed from TSB values measured at 6 hrs of age and then every 4-6 hrs during day and 6-12 hrs during night. Curves of babies with TSB > 205 micromol/L and those with TSB > 205 micromol/L taken separately, their 1st percentile	Phase 1: Time of reaching highest TSB values in Phase 1 At 24-48 hrs: 20.3% At 49-72 hrs: 48.4% At 73-96 hrs: 26.0% At 97-120 hrs: 5.3% Phase 2: Predictive ability of Trend 12 and 15 as risk demarcators for subsequent hyperbilirubinaemia **HOSPITAL A**	Unselected population Test & Reference test described adequately Reference test a standard test as nomogram developed from lab TSB values Blinding – Not reported

		any illness requiring admission to neonatal intensive care unit, infants with delayed meconium passage, hypothermia, hypoglycaemia, cephalohematoma, local bleeding, hemorrhagic disease of newborn, UTI or suspected clinical sepsis. <u>Phase 2: Application of the nomogram</u> Healthy term babies in two hospitals who had TSB estimation between 30-72 hrs due to clinical jaundice Hospital A: N = 1244, mean BW 3299 <u>+</u> 447 grams,	TSB values determined for each hour of life and connected to form percentile tracks. Predictive ability of TSB levels measured in Phase 2 evaluated for subsequent hyperbilirubinaemia at 24-36 hrs, 37-48 hrs, 49-60 hrs, 61-72 hrs and all together (threshold value – Trend 12 defined as TSB value exceeding the 1st percentile track of babies with TSB > 205 micromol/L, and Trend 15 defined as TSB value exceeding the 1st percentile track of babies with TSB > 256 micromol/L	*Prevalence of TSB > 205* micromol/L 230/1244 (18.5%) *Prevalence of TSB > 205 micromol/L* 100/1244 (8.0%) *Single TSB measurement with Trend 12 as threshold* Sensitivity: 228/230 (99.1%) Specificity: 496/1014 (48.9%) PPV: 228/746 (30.6%) NPV: 496/498 (99.6%) + LR: 1.9 *Single TSB measurement with Trend 15 as threshold* Sensitivity: 100/100 (100%) Specificity: 859/1144 (75.1%) PPV: 100/385 (26.0%) NPV: 859/859 (100%) +LR: 4.0	

		mean GA 39.2 + 1.4 weeks Gender: Males = 56.4% ethnicity: Not reported Hospital B: N = 498, mean BW 3312 + 394 grams, mean GA 39.5 + 1.3 weeks Gender: Males = 51.8% ethnicity: Not reported		*Two TSB measurements with Trend 12 as threshold* Sensitivity: 85/85 (100%) Specificity: 217/429 (50.6%) PPV: 85/302 (28.6%) NPV: 217/217 (100%) +LR: 2.0 *Two TSB measurements with Trend 15 as threshold* Sensitivity: 92/92 (100%) Specificity: 355/422 (84.1%) PPV: 92/159 (57.9%) NPV: 355/355 (100%) +LR: 6.3 **HOSPITAL B** *Prevalence of TSB > 12 MG/DL* 129/498 (25.9%) *Prevalence of TSB > 15 MG/DL* 59/498 (11.8%)	

				Single TSB measurement with Trend 12 as threshold Sensitivity: 127/129 (98.4%) Specificity: 131/369 (35.5%) PPV: 127/365 (34.8%) NPV: 131/133 (98.5%) + LR: 1.5 *Single TSB measurement with Trend 15 as threshold* Sensitivity: 52/59 (88.1%) Specificity: 344/439 (78.4%) PPV: 52/147 (35.4%) NPV: 344/351 (98.0%) +LR: 4.1 *Two TSB measurements with Trend 12 as threshold* Sensitivity: 54/54 (100%) Specificity: 84/121 (69.4%) PPV: 54/91 (59.3%)	

				NPV: 84/84 (100%) +LR: 3.3 *Two TSB measurements with Trend 15 as threshold* Sensitivity: 23/24 (95.8%) Specificity: 117/151 (77.5%) PPV: 23/58 (40.4%) NPV: 117/118 (99.2%) +LR: 4.3	
Bhutani VK; Year: 2000 Country: USA 38	Study Type: Diagnostic study Evidence Level: 1b	All term and near-term babies (either = 36 weeks GA and BW = 2000 grams or = 35 weeks and BW = 2500 grams) discharged as healthy from the well baby nursery in a tertiary hospital N = 490, observations=1788, mean BW 3404 <u>+</u> 518 grams, mean GA 38. 9 <u>+</u> 1.5 weeks	<u>Test:</u> Pre-discharge TcB reading from the forehead using BiliChek measured between 24 and 72 hours of age. <u>Reference standard:</u> Laboratory TSB measured at same time as TcB, and also sent for HPLC assays. Paired TcB and HPLC TSB values	<u>Prevalence of significant hyperbilirubinaemia</u> 30/490 (6.1%) <u>Correlation of TcB levels with TSB levels using HPLC (Pearson correlation coefficient, N = 1788 samples)</u> r = 0.91, p < 0.01 <u>Bland Altman analysis for difference between TSB and TcB</u>	Unselected population but only 1.1% of study population had TSB values > 256 micromol/L Test & Reference test described adequately Reference test a standard test as nomogram developed from lab TSB values Blinding – specified

		Gender: Not reported Ethnicity: White = 59.1% Black = 29.5% Hispanic = 3.5% Asian = 4.5% Others = 3.5% Exclusion: clinical manifestation of sepsis, heart or circulatory disease, respiratory distress, clinical evidence of haemoglobinopathy, initiation of phototherapy.	plotted on the hour-specific nomogram. Predictive ability of pre-discharge TcB levels (threshold = 75^{th} centile) evaluated for subsequent significant hyperbilirubinaemia (defined as TSB = 95^{th} centile or in the high-risk zone on the hour-specific nomogram)	MD = -8 micromol/L (95%CI -38.9 to 54.9) <u>Predictive ability of pre-discharge TcB (threshold = 75^{th} centile) for significant hyperbilirubinaemia (N = 419)</u> Sensitivity: 23/23 (100%) Specificity: 349/396 (88.1%) PPV: 23/70 (32.9%) NPV: 349/349 (100%) +LR: 8.4	
Newman TB; Year: 2000	Study Type: Nested case- control study Evidence Level: II	Cohort of all infants with BW = 2000 grams and GA = 36 weeks born alive at 11 hospitals of a health maintenance organization during a two year period (N = 51,387)	1) Relationship of clinical and demographic factors associated with hyperbilirubinaemia evaluated by bivariate analysis and OR	<u>Maternal and prenatal factors associated with significant hyperbilirubinaemia (those with p<0.05 in bivariate analysis)</u> *Maternal factors*	Unselected population but exclusion criteria not defined Confounding variables controlled for during multivariate analysis

Country: USA 8		Cases: Babies with maximum TSB levels = 428 micromol/L within the first 30 days after birth N = 73 Mean BW: Not reported Mean GA: Not reported Gender: Males = 67.1% Ethnicity: Not reported (only maternal race specified) Controls: Random sample of babies from the cohort with maximum TSB levels = 428 micromol/L N = 423 Mean BW: Not reported Mean GA: Not reported Gender: Males = 54.4% Ethnicity: Not reported (only maternal race specified)	2) Risk factors significant in the univariate model entered into multiple regression analysis to find independent predictors of hyperbilirubinaemia – both by including and excluding early jaundice cases Early jaundice cases (N = 14) defined as babies with TSB exceeding recommended phototherapy threshold for age during birth hospitalization, those given phototherapy during birth hospitalization, when jaundice noted at less than 20 hours of age and TSB not measured within 6 hrs of that time. 3) Risk index developed by assigning points equal to the OR for risk factors that were significant in the logistic regression model with the exclusion of early jaundice cases, and predictive accuracy compared by the c-statistic (equal to area under ROC curve)	≠ Race, ≠ maternal age, ≠ family HISTORY OF jaundice in a newborn, ≠ vacuum delivery *Neonatal factors* ≠ Male sex, ≠ lower GA, ≠ early jaundice, ≠ cephalohaematoma, ≠ bruising, ≠ breastfeeding at time of discharge Factors independently associated with significant hyperbilirubinaemia from multivariate regression analysis (OR with 95%CI) *All cases (N = 73)* Early jaundice: OR 7.3 (2.8-19)	Test & Reference test described adequately Reference test a standard test Blinding – Not reported

		For analyses examining the use of phototherapy only, additional random sample of 30 babies with maximum TSB levels of 342 to 426 micromol/L added to the control group Exclusion criteria: Not defined	<u>Reference standard:</u> Significant hyperbilirubinaemia defined as maximum TSB levels = 428 micromol/L within the first 30 days after birth.	GA (per wk): OR 0.6 (0.4-0.7) Breastfeed only at discharge: OR 6.9 (2.7-17.5) Asian race: OR 3.1 (1.5-6.3) Bruising: OR 3.5 (1.7-7.4) Cephalohaematoma: OR 3.2 (1.1-9.2) Maternal age $\geq$ 25 yrs: OR 2.6 (1.1-9.2) *Cases excluding early jaundice (N = 59)* GA (per wk): OR 0.6 (0.4-0.7) Breastfeed only at discharge: 5.7 (2.1-15.5) Asian race: OR 3.5 (1.7-7.4) Bruising: OR 4.0 (1.8-8.8) Cephalohaematoma: OR 3.3 (1.1-10) Maternal age $\geq$ 25 yrs: OR 3.1 (1.2-8.1) <u>Risk Index scoring</u> 6 points each for exclusive breastfeeding and family HISTORY OF jaundice in a newborn,	

				4 points each for bruising and Asian race, 3 points each for cephalhematoma and maternal age <u>></u> 25 yrs, 1 point for male sex, -2 points for black race, and 2(40-GA) <u>Accuracy of Risk Index score in predicting significant hyperbilirubinaemia</u> Overall c-statistic 0.85 *Risk index score < 10* +LR: 0.2 *Risk index score > 10* +LR: 2.2 *Risk index score > 20* +LR: 18.2	
Newman TB;	Study Type: 1) Nested case-control study	**Study 1:** Cohort of all infants with BW = 2000 grams and GA = 36 weeks	**Study 1:** Risk index score developed by assigning points equal to the OR	**Study 1:** <u>Comparison of 1995-96 cohort (N = 51,387) with 1997-98 cohort (N =</u>	Retrospective cohort study Unselected population but exclusion criteria not defined

Year: 2005 Country: USA 39	2) Retrospective cohort Evidence Level: II	born alive at 11 hospitals of a health maintenance organization during a two year period (N = 53,997) <u>Cases:</u> Babies with maximum TSB levels = 428 micromol/L within the first 30 days after birth (N = 67) <u>Controls:</u> Random sample of babies from the cohort with maximum TSB levels = 428 micromol/L (N = 208) Mean BW: Not reported Mean GA: Not reported Gender: Not reported Ethnicity: Not reported **Study 2:** All infants with BW = 2000 grams and GA = 36 weeks born alive at 11 hospitals of a health maintenance organization during a four year period, and who had TSB measured at < 48 hrs of age (N = 5,706) Mean BW: Not reported	for risk factors significant in the logistic regression model (not including family history of jaundice) with the exclusion of early jaundice cases. Predictive accuracy compared by the c-statistic (equal to area under ROC curve) **Study 2:** <u>Test 1</u> Partial clinical risk index derived from Risk index in Study 1 by deleting factors family history of jaundice, breastfeeding, bruising and by substituting scalp injury in medical records with cephalohaematoma. <u>Test 2</u> TSB levels measured at < 48 hrs and classified into 4 age-specific percentile groups < 40^{th} centile, 40^{th} to < 75^{th} centile, 75^{th} to < 95^{th} centile,	<u>53,997)</u> No difference regarding % of babies with TSB level $\geq$ 342 micromol/L, TSB $\geq$ 428 micromol/L, age more than 7 days at the time of highest TSB levels, average number of TSB tests per patient, length of hospitalization stay and treatment with phototherapy <u>Accuracy of Modified risk index score (with exclusion of family HISTORY OF jaundice) in predicting significant hyperbilirubinaemia (with 95%CI)</u> *1997-1998 cohort* c-statistic 0.83 (95%CI 0.77 to 0.89) *1995-96 cohort* c-statistic 0.84 (95%CI 0.79 to 0.89) **Study 2:**	Confounding variables controlled for during multivariate analysis Test & Reference test described adequately Reference test a standard test Blinding – Not reported

		Mean GA: Not reported Gender: Not reported Ethnicity: Not reported Exclusion criteria: Babies developing TSB levels > 342 micromol/L at < 48 hrs	> 95th centile). The data was then transformed into hour-specific z scores <u>Reference standard</u> Significant Hyperbilirubinaemia defined as maximum TSB levels = 342 micromol/L	<u>Prevalence of hyperbilirubinaemia</u> 230/5,706 (4.7%) <u>Risk of developing TSB levels > 342 micromol/L based on TSB percentile group</u> < 40th centile = 0.5 40th to < 75th centile = 0.7 75th to < 95th centile = 3.3 $\geq$ 95th centile = 13.8 <u>Accuracy of tests in predicting hyperbilirubinaemia (TSB levels = 342 micromol/L</u> *Partial risk index score* c-statistic 0.69 *TSB centile group* c-statistic 0.79	

				TSB z score c-statistic 0.83 *TSB z score + Partial risk index score* c-statistic 0.86	
Keren R; Year: 2005 Country: USA 12	Study Type: Retrospective cohort/ diagnostic study Evidence Level: 2	Infants with BW = 2000 grams if GA = 36 weeks and BW = 2500 grams if GA = 35 weeks participating in the hospital's early discharge programme, and who had both pre and post-discharge TSB levels measured at the phase when $\geq$ 75% babies had both the samples (N = 899) Group 1: infants with post-discharge TSB > 95th centile on nomogram (N = 98, 54% males, mean BW 3.4 $\pm$ 0.5 kg) Group 2: infants with post-discharge TSB < 95th centile on nomogram (N = 801, 52% males,	Test 1: Clinical risk factor score derived from regression modelling using the factors found independently associated with significant hyperbilirubinaemia. Test 2: Pre-discharge TSB levels expressed as risk zone on an hour-specific bilirubin nomogram (High risk > 95th centile, High intermediate risk 76th – 95th centile, Low intermediate risk 40th – 75th centile, Low risk 0 –	Prevalence of significant hyperbilirubinaemia 98/899 (11%) Factors associated with significant hyperbilirubinaemia (those with p<0.2 in univariate analysis) *Increased risk* GA < 38 weeks and $\geq$ 40 weeks, LGA babies, higher pre-discharge TSB risk zone, combined breast and bottle feeding, maternal diabetes, vacuum extraction, prolonged rupture, oxytocin	Retrospective cohort study Unselected population Test & Reference test described adequately Reference test a standard test Blinding – Not reported

		mean BW 3.3 ± 0.5 kg) Exclusion: admission and treatment in intensive care nursery for neonatal illness and babies requiring phototherapy during birth hospitalization.	40^{th} centile) <u>Reference standard:</u> Significant Hyperbilirubinaemia defined as TSB level > 95^{th} centile on hour-specific nomogram. Accuracy of Clinical risk score and pre-discharge TSB risk zone evaluated for predicting significant hyperbilirubinaemia	use *Decreased risk* SGA, parity, caesarean section <u>Factors independently associated with significant hyperbilirubinaemia from multivariate regression analysis (OR with 95%CI)</u> Birthweight: 1.5 (1.2-1.9) GA < 38 weeks: 2.6 (1.5-4.5) Oxytocin: 2.0 (1.2-3.4) Vacuum delivery: 2.2 (1.5-3.6) Exclusive breastfeeding: 2.6 (1.5-4.5) Breast and bottle feeding: 2.3 (1.1-4.9) <u>Clinical risk index scoring</u> Birthweight: 3 points for 2501-3000 grams, 6 for 3001-3500 grams, 9 for 3501-4000 grams, 12 for 4001-4500 grams, 15 for 4501-5000 grams GA < 38 weeks: 5 points Oxytocin: 4	

				points Vacuum delivery: 4 points Exclusive breastfeeding: points Breast and bottle feeding: 4 points <u>Predictive accuracy for predicting significant hyperbilirubinaemia</u> RISK FACTOR SCORE c-statistic 0.71 (0.66-0.76) *Risk index score 0-7* +LR: 0.1 *Risk index score 8-11* +LR: 0.4 *Risk index score 12-15* +LR: 0.9 *Risk index score 16-19*	

				+LR: 2.0 *Risk index score 20-23* +LR: 2.6 *Risk index score > 24* +LR: 3.2 PRE-DISCHARGE TSB c-statistic 0.83 (0.80-0.86) *TSB centile 0-40th* +LR: 0.05 *TSB centile 41-75th* +LR: 0.2 *TSB centile 76-95th* +LR: 2.2	

				TSB centile > 95th +LR: 9.4	
Keren R et al; Year: 2008 Country: USA 14	Study Type: Prospective cohort study Evidence Level: II	Infants managed exclusively in the well infants nursery of an urban tertiary care hospital with GA = 36 weeks and BW = 2000 grams or GA = 35 weeks and BW = 2500 grams N = 812 mean BW 3.3 $\pm$ 0.5 kg GA < 38 weeks: 13.4% Gender: males = 49.4% Ethnicity: White = 33.5% Black = 53.2% Asian = 9.8% Other = 3.4% Since the population in the area was predominantly black, stratified sampling scheme used to get a	1) Factors associated with significant hyperbilirubinaemia in univariate analysis entered into regression modeling for clinical risk factor model 2) Comparison of diagnostic accuracy of three tests in predicting significant hyperbilirubinaemia by the c-statistic (mathematically equal to area under ROC curve) Test 1: Pre-discharge bilirubin measured either by TcB or TSB at < 52 hrs of age, and expressed as risk-zone on hour specific nomogram. Daily TcB levels recorded using BiliChek, and TSB performed if TcB above 75th centile on hour-specific nomogram or TcB reading = 205 micromol/L. TSB	Prevalence of significant hyperbilirubinaemia 48/751 (6.4%) – 61 had an incomplete follow-up 1) Association of factors with significant hyperbilirubinaemia (Univariate analysis) (n = 812) *Factors increasing risk* Pre-discharge bilirubin – high risk zone OR: 147 (95%CI 34-639) high-intermediate risk zone OR: 21 (95%CI 4.9-93.0) GA < 38 weeks OR: 9.2 (95%CI 4.4-19.0) intended breastfeeding OR: 2.2 (95%CI	Unselected population (stratified sampling) with well defined exclusion criteria Baseline characteristics of two groups not compared Confounding variables controlled Methodology described adequately Blinding – not specified

		representative sample. <u>Group 1:</u> Infants with significant hyperbilirubinaemia (N = 48) <u>Group 2:</u> Infants without significant hyperbilirubinaemia (N = 703) Exclusion: babies transferred to the intensive care nursery for any reason Babies who received intravenous antibiotics for concern for sepsis.	value taken for analysis when both TcB and TSB done. <u>Test 2:</u> Clinical risk factors assessed by review of hospital charts for maternal race, intended method of feeding, GA, history of previous infant with jaundice, clinical assessment of jaundice, G-6PD deficiency. <u>Test 3:</u> Combination of pre-discharge bilirubin risk zone and clinical risk factors. <u>Reference standard:</u> Bilirubin levels (TcB or TSB) measured on day 3-5 on both hospitalized and discharged babies (at home) using similar method as in Test 1, and Significant Hyperbilirubinaemia	1.0-4.5) intended breast + bottle feeds OR: 3.7 (95%CI 1.6-8.6) Grade 4 or higher degree of clinical jaundice OR 6.0 (95%CI 2.1 to 17) *Factors decreasing risk* Black race OR 0.43)95%CI 0.23-0.80) Maternal history of smoking OR: Not reported <u>Factors significant in multivariate analysis model (p<0.05)</u> GA<38 weeks OR 19 (95%CI 6.3- 56) Mother's plan of exclusive breastfeeding: OR 3.7 (95%CI 1.1- 13) Black race: OR 0.22 (95%CI 0.08- 0.61) Grade 4 or higher jaundice observed clinically: OR 1.7 (95%CI 1.2-2.6) Female sex: OR 3.2 (95%CI 1.2-8.4) <u>2) Predictive ability of the three tests in predicting significant hyperbilirubinaemia (multivariate</u>	

			defined as bilirubin levels exceeding or within 17 micromol/L of the hour-specific phototherapy treatment thresholds.	regression) *Test 1: Pre-discharge bilirubin risk zone* c-statistic 0.88 (95% 0.85 to 0.91) *Test 2: Clinical risk factors (final model had 5 factors – GA, intended method of feeding, black race, extent of jaundice and gender)* c-statistic 0.91 (95% 0.86 to 0.97) *Test 3: Combination model (pre-discharge risk zone + clinical factors of GA and % weight loss)* c-statistic 0.96 (95% 0.93 to 0.98) *Test 3 vs. Test 1* p-value for difference< 0.01 *Test 3 vs. Test 2* p-value for difference = 0.15 *Test 2 vs. Test 1*	

				p-value for difference = 0.35	
Herschel M; Year: 2002 Country: USA 40	Study Type: Prospective diagnostic study Evidence Level: II	All consecutive babies admitted to the General Care Nursery of a tertiary care city hospital. Mean GA: 38.9 + 1.4 weeks Mean BW: 3267 + 480 grams Gender: Males = 47.6%, Ethnicity: black - 82.9% white = 9.8% Hispanic = 3.3% Asian = 2% Other = 2% Results given separately for babies with smoking mothers and non-smoking mothers. Exclusion: not defined	**Objective 1:** Diagnostic accuracy of DAT Test: Direct Antiglobulin Test (DAT) done on cord blood of all newborn babies. Reference standard: Haemolysis identified by measuring ETCOc levels in all babies at 12 + 6 hrs and 24 + 6 hrs. Significant haemolysis defined as ETCOc levels = 95th centile in babies of non-smoking mothers at 12 hrs (= 3.2 µl/l), and among all babies at 24 hrs (= 2.5 µl/l). **Objective 2:** Accuracy of DAT and ETCOc in predicting hyperbilirubinaemia defined as bilirubin reading = 75th centile on the nomogram (TcB readings with BiliChek at the time of discharge or earlier as clinically indicated, and subsequent TSB as deemed	**Objective 1:** Prevalence of DAT positive results 23/659 (3.5%) Accuracy of DAT in detecting haemolysis (ETCOc = 3.2 µl/l) in babies of non-smoking mothers (N = 499) Sensitivity: 10/26 (38.5%) Specificity: 466/473 (98.5%) PPV: 10/17 (58.8%) NPV: 466/482 (96.7%) Accuracy of DAT in detecting haemolysis (ETCOc = 2.5 µl/l) in babies of all mothers (N = 563) Sensitivity: 4/47 (8.5%) Specificity: 504/516 (97.6%) PPV: 4/16 (25.0%) NPV: 504/547 (92.1%)	Unselected population but exclusion criteria not defined Test and Reference described adequately Reference test a standard one Blinding – Not reported

			necessary)	**Objective 2:** <u>Prevalence of hyperbilirubinaemia. In babies of non-smoking mothers</u> <u>61/499 (12.2%)</u> <u>Accuracy of positive DAT test in predicting hyperbilirubinaemia in babies of non-smoking mothers (N = 499)</u> Sensitivity: 9/61 (14.7%) Specificity: 430/438 (98.2%) PPV: 9/17 (52.9%) NPV: 430/482 (89.2%) <u>Accuracy of ETCOc (threshold = 2.5 µl/) in predicting hyperbilirubinaemia in babies of non-smoking mothers (N = 499)</u> Sensitivity: 17/61 (27.9%) Specificity: 429/438 (97.9%) PPV: 17/26 (65.4%) NPV: 429/473 (90.7%)	
	Study Type:	All consecutive newborns of	<u>Test 1:</u> Coombs' test done on	<u>Prevalence of severe</u>	

Risemberg HM; Year: 1977 Country: USA 41	Prospective diagnostic study Evidence Level: III	hetero-specific pregnancies (blood group O mothers with babies having blood group A or B) born in two hospitals (N = 91) Mean GA: Not reported Mean BW: Not reported Gender: Not reported Ethnicity: Not reported Exclusion: Rh incompatible babies	cord blood of all newborn babies. Test 2: UCB levels measured (threshold value > 68 micromol/L) Reference standard: Severe hyperbilirubinaemia defined as TSB > 274 micromol/L at 12-36 hours of age	hyperbilirubinaemia 13/91 (14.3%) Prevalence of DAT positive 31/91 (34.1%) Accuracy of positive DAT test in predicting severe hyperbilirubinaemia (N = 91) Sensitivity: 12/13 (92.3%) Specificity: 59/78 (75.6%) PPV: 12/31 (38.7%) NPV: 58/60 (98.3%) Accuracy of UCB levels (threshold > 68 micromol/L) in predicting severe hyperbilirubinaemia (N = 91) Sensitivity: 12/13 (92.3%) Specificity: 78/78 (100%) PPV: 12/12 (100%) NPV: 78/79 (98.7%)	Small sample Test and Reference standard not described in details Reference test a standard one Blinding – Not reported

Chen JY; Year: 1994 Country: Taiwan 44	Study Type: Diagnostic accuracy study Evidence Level: III	Healthy term babies born to blood group O, Rh positive mothers and weighing = 2.5 kg with no evidence of perinatal asphyxia, polycythemia, huge cephalhematoma or infection. (N = 88) Mean GA: Not reported Mean BW: Not reported Gender: Not reported Ethnicity: Not reported Exclusion: not defined	Test 1: Direct Coombs' test from cord blood. Test 2: UCB levels measured threshold value > 68 micromol/L Reference standard: Hyperbilirubinaemia defined as TSB levels = 256 micromol/L) within first 4 days of life and/or early jaundice with TSB levels = 171 micromol/L within 24 hours of birth	Prevalence of DAT positive 14/53 (26.4%) Prevalence of hyperbilirubinaemia 29/53 (54.7%) Diagnostic accuracy of Coombs' test for predicting hyperbilirubinaemia (N = 53) Sensitivity: 13/29 (44.8%) Specificity: 23/24 (95.8%) PPV: 13/14 (92.8%) NPV: 23/39 (59.0%) Diagnostic accuracy of UCB (> 68 micromol/L for predicting hyperbilirubinaemia (N = 53) Sensitivity: 12/29 (41.4%) Specificity: 24/24 (100%) PPV: 12/12 (100%) NPV: 24/41 (58.5%)	Small sample and data derived from results of two groups of babies with blood group A & B only Test & Reference test not described in detail Reference test is a standard one Blinding: none

Sarici SU Year: 2002 Country: Turkey 45	Study type: Prospective diagnostic study Evidence level: III	All full-term babies (GA > 38 weeks) with blood groups A or B born to mothers with blood group O without simultaneous Rhesus blood factor incompatibility. (N = 150) Mean GA: 39.4 $\pm$ 1.2 weeks Mean BW: 3212 $\pm$ 415 grams Gender: Males = 50.7% Ethnicity: Not reported	Test: Direct Antiglobulin Test (DAT) on cord blood Reference standard: Total serum bilirubin level (TSB) at 6, 30, 54, 78 and 102 hours Hyperbilirubinaemia was defined as: TSB $\geq$ 85 micromol/L and increase of 8.5 micromol/L in first 24 hours Day 2 TSB > 205 micromol/L Day 3 TSB > 256 micromol/L Day 4/5 TSB > 290 micromol/L	Prevalence of DAT positive 4.4% (6/136) Prevalence of Hyperbilirubinaemia 29/136 (21.3%) Accuracy of DAT in predicting hyperbilirubinaemia (N = 136) Sensitivity: 6/23 (20.1%) Specificity: 107/107 (100%) PPV: 6/6 (100%) NPV: 107/130 (82.3%)	Aim of study was to see if 6hr TSB levels predicted hyperbilirubinaemia No data on 14 babies for clinical or consent reasons Selected sample and test not described. Reference is a standard test and was adequately described Blinding: None
Meberg A Year: 1998	Study Type: Diagnostic Accuracy study	All babies born in a general hospital. (N = 2,463) Mean GA: Not reported (94.8%	Test: Direct Antiglobulin Test (DAT) on cord blood Reference: TSB levels requiring phototherapy according to the	Prevalence of DAT positive 4.1% (100/2,463)	Universal sample Test: not adequately described

Country: Norway [42]	Evidence level: III	were term babies $\geq$ 27 weeks) Mean BW: Not reported Gender: Not reported Ethnicity: Not reported Exclusion: Stillbirth, death, high-risk deliveries. severe neonatal conditions	Hillingdon Hospital bilirubin chart. Phototherapy indicated at TSB > 350 micromol/L at $\geq$72 hours for term babies TSB >250 micromol/L at $\geq$ 120 hours for preterm babies TSB at lower levels for younger babies	<u>Prevalence of Hyperbilirubinaemia</u> 139/2,463 (5.6%) <u>Accuracy of DAT in predicting need for phototherapy for hyperbilirubinaemia</u> (N = 2,463) Sensitivity: 20/139 (14.4%) Specificity: 2244/2324 (96.6%) PPV: 20/100 (20.0%) NPV: 2244/2463 (91.1%)	Reference test is a standard one but not described adequately Blinding: None

<u>Evidence table – Prediction of hyperbilirubinaemia (effectiveness)</u>

Bibliographic details	Study type & Evidence level	Patient characteristics	Test, Reference Standard, Threshold for a positive test	Results	Reviewers Comments
Petersen JR; Year: 2005 Country: USA 46	Study Type: Retrospective cohort study Evidence Level: II	Babies with a diagnosis-related group designation indicating 'normal newborn' and admitted in the newborn unit of a tertiary hospital from August 2002 to December 2003. (N = 6603, males 52.9%) Group 1: babies born before TcB introduced – August 2002 to March 2003 (N = 3237, 51.3% males) Group 2: babies born after TcB introduced – May 2003 to December 2003 (N = 3366, 53.2% males) Exclusion: babies who did not fit the criterion of 'normal newborns', and those born in the transitional	Comparison of the number of births, number of vaginal and caesarean deliveries, ethnicity and gender distribution, newborn readmission rates, and number of serum bilirubin measurements between Group 1 vs. Group 2	<u>Comparison of bilirubin testing (values in mean (SD)</u> *Number of monthly admissions* 404.6 (33.2) vs. 420.7 (36.8), p=0.42 *Number of newborns tested monthly* 128.0 (26.1) vs. 152.1 (26.2), p=0.10 *% of newborns tested by TSB levels* 6.4% vs 8.7% p=0.21 *Serum bilirubin measurement per newborn* 1.51 vs. 1.56	Retrospective cohort study Some of the baseline characteristics compared between the two groups, but information not given for all variables. Confounding variables not adjusted

		time – April 2003		p=0.33 *Total bilirubin measurement (TcB +TSB)* 0.37 vs. 0.61 p=0.007 *% of newborns treated with phototherapy* 5.9% vs 7.7% p=0.014 *Newborn readmissions for hyperbil. within 7 days of initial discharge (per 1000 births)* 4.5 vs 1.8 p=0.044	
Ebbesen F; Year: 2002 Country:	Study Type: Diagnostic study Evidence Level: III	All newborns more than 24 hours old who for clinical reasons had their plasma bilirubin determination during the day, except at weekends. Group 1: Both preterm infants < 35 weeks and sick term and near-term	TcB measurement using BiliChek from forehead, sternum, knee and the foot – mean of 5 measurements from each site taken for data analysis. Reference standard: Laboratory TSB levels taken concurrently	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 210) **Group 1:** *Forehead*	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified

Denmark 47		infants in the NICU N = 261 mean BW 2521 grams - range 680 to 4645 grams, mean GA 34.6 weeks - range 25 to 43 weeks postnatal age at 1st TcB: 98.4 - range 48 – 840 Gender: Males = 60.1% Ethnicity: Non-northern European descent = 9% Group 2: Healthy term and near-term infants with GA > 35 weeks in the maternity ward N = 227 mean BW 3362 grams - ange 2170 to 5000 grams mean GA 38.6 weeks - range 35 to 43 weeks postnatal age at 1st TcB: 74.4 -	with TcB measurement Diagnostic accuracy of TcB from forehead (threshold > 0.70 of phototherapy limit) estimated for predicting TSB levels > phototherapy limits as suggested by the Danish Pediatric Society	$r = 0.88$, $p > 0.05$ *Sternum* $r = 0.82$, $p < 0.001$ *Knee* $r = 0.77$, $p < 0.001$ *Foot* $r = 0.51$, $p < 0.001$ On comparing correlation coefficient of forehead with that for sternum, knee and foot, $p < 0.001$ for each of the comparison **Group 2:** *Forehead* $r = 0.87$, $p > 0.05$ *Sternum* $r = 0.90$, $p < 0.05$ *Knee* $r = 0.83$, $p < 0.05$ *Foot* $r = 0.63$, $p < 0.001$	Data not given for the mean difference and SD from Bland Altman analysis for TSB - TcB

		range 48 – 360 Gender: Males = 55.5% Ethnicity: Non-northern European descent = 7% Exclusion: babies already receiving phototherapy or who received phototherapy 6 hours before TSB measurement, with skin infection, purpura, bruising		On comparing correlation coefficient of forehead with that for sternum, knee and foot, $p < 0.05$ for comparison with knee and foot only <u>Diagnostic accuracy of TcB (threshold value > 0.70 times the phototherapy limit) from forehead in detecting TSB > phototherapy limit</u> **Group 1 (N = 504 observations):** Sensitivity: 108/109 (99.1%) Specificity: 177/395 (44.8%) PPV: 108/326 (33.1%) NPV: 177/178 (99.4%) **Group 2 (N = 317 observations):** Sensitivity: 3/3 (100%) Specificity: 254/314 (80.9%) PPV: 3/63 (4.8%) NPV: 254/254 (100%)	
	Study Type:	All babies > 33 weeks in the	TcB using BiliChek (site not	<u>Correlation of TcB levels with lab TSB</u>	

Samanta S; Year: 2004 Country: UK 48	Diagnostic study Evidence Level: II	postnatal ward of a regional teaching hospital who were due to have blood taken for TSB estimation N = 300 median BW 3295 grams – range 1972 to 4720 median GA 39 weeks – range 33 to 42 median postnatal age: 72 hours – range 24 to 264 Gender: Males = 50% Prevalence of TSB > 250 micromol/L = 55/300 (18.3%) Exclusion: babies who had previously received phototherapy	specified) – single measurement taken. Reference standard: Laboratory TSB levels taken concurrently with TcB measurement Diagnostic accuracy of TcB (various thresholds) estimated by plotting ROC curve.	levels (Pearson correlation coefficient, N = 300) r = 0.77, p < 0.0001 Bland Altman analysis for difference between lab TSB and TcB MD = -10.6 micromol/L (95%CI -80.0 to +60.0) SD = Not reported Diagnostic accuracy of TcB (threshold value > 195 micromol/L) for detecting TSB > 250 micromol/L Sensitivity: 50/55 (90.9%) Specificity: 162/245 (66.1%) PPV: 50/133 (37.6%) NPV: 162/167 (97%)	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified
Briscoe L;	Study Type: Diagnostic study	Babies > 34 weeks who were having blood taken for any reason, mostly done for clinical jaundice.	TcB reading using Minolta JM-102 at the forehead (mean of 3 readings used for	Correlation of JM-102 with lab TSB levels (Pearson correlation coefficient, N = 303)	Unselected population Test & Reference test

Year: 2002 Country: UK 49	Evidence Level: II	N = 303 median BW 3267 grams - range 1800-5008 median GA 39 weeks - range 34-42 median age at presentation: 3 – range 0 to 13 days Gender: Not reported Ethnicity White: 94.7% <u>Prevalence of TSB > 300 micromol/L</u> = 3.3% (10/303) Exclusion: babies who had previously received phototherapy	analysis) <u>Reference standard:</u> Laboratory TSB levels measured concurrently For diagnostic accuracy: Area under ROC curve calculated for detecting TSB > 249 micromol/L	r = 0.76, p < 0.0001 <u>Diagnostic accuracy of JM-102 for detecting TSB > 249 micromol/L (N = 303)</u> Area under ROC = 0.89 *Predictive accuracy of JM-102 value 19.9 (highest accuracy from ROC curve)* Sensitivity: 86% (81-89%) Specificity: 78% (73-83%) PPV: Not reported NPV: Not reported	described in detail Test and reference test carried out within one hour Blinding – not specified Data not extractable for calculating values of TP, FP, TN & FN
Bhutani VK; Year: 2006	Study Type: Observational study Evidence Level: III	All babies born from 01 January 1990 to 31 December 2000 who were discharged from the well-baby nursery of a tertiary hospital as term and near-term healthy babies.	Incremental hospital systems approach in the management of neonatal hyperbilirubinaemia studied with different clinical approaches at different phases: <u>Phase 1:</u>	<u>Incidence of adverse outcomes for term and near-term infants in the well baby nursery</u> *Hospital-based intensive phototherapy* Phase 1: 3.6%	Non-comparative observational study Time periods of different clinical approaches overlapping. Confounding variables not adjusted

Country: USA 50		N = 31,059 mean BW: 3318 ± 457 grams mean GA: 38.7 ± 1.3 weeks Gender: Males = Not reported Ethnicity: White = 43.5% Black = 39.1% Asian = 6.9% Hispanic = 4.5% Exclusion: low BW preterm babies admitted to the well-baby nursery babies admitted to and treated in the intensive care nursery for any neonatal illness	selective pre-discharge TSB measurements (1990-1992) <u>Phase 2:</u> universal TSB measurement at the time of metabolic screening with an authority given to nurses (after in-service workshops and training) to obtain bilirubin estimation at their own discretion (1993-95) <u>Phase 3:</u> universal TSB screening along with post-discharge follow-up based on the hour-specific nomogram (1996-98) <u>Phase 4:</u> organized institutional systems-based management of newborn jaundice (1999-2000) <u>Phase 5:</u> impact of the complete approach assessed in 2001-2003. Under the systems-based approach all babies had pre-discharge bilirubin estimation (TSB or TcB) and follow-up care for jaundice was given either at the hospital (more than 85% cases) or at home within 24-48 hours of discharge. Other	Phase 2: 4.5% Phase 3: 5.4% Phase 4: 2.5% Phase 5: 1.3% *Exchange transfusion* *(in risk)* Phase 1: 1:2137 Phase 2: 1:1322 Phase 3: 1:1637 Phase 4: 1:3198 Phase 5: 1:11995 *Number of readmissions* 14 per 1000 well baby infants discharged in 1994 to 5.5 per 1000 in 2001-2003. <u>Results in babies (6 – 72 hours of age) with ABO incompatibility (N = 553)</u> *High risk zone or TSB >95th centile (N = 55 or 9.9%)*	

			components of the approach included lactation support services, counselling and information to parents on the clinical course and rare risk of neurotoxicity, and close follow-up of jaundiced babies based on their hour-specific bilirubin levels. A clinical evaluation for jaundice severity was mandatory for all babies at about the age of 4 days, along with subsequent follow-up of at-risk infants at age 7 days and 2 weeks.	Phototherapy: 54.5% Exchange Transfusion: 5.4% Length of stay: 3.3 days *Intermediate risk zone or TSB 40^{th}-74^{th} centile (N = 233 or 42.1%)* Phototherapy: 22.7%, Exchange Transfusion: 0% Length of stay 2.6 days *Low risk zone or TSB < 40^{th} centile (N = 265 or 48.0%)* Phototherapy: 2.6% Exchange Transfusion: 0% length of stay: 2.36 days	
Eggert LD;	Study Type: Retrospective cohort study	Retrospective cohort study to determine the effectiveness of a pre-discharge bilirubin screening program instituted in December	Pre-discharge bilirubin screening program started in December 2002 to measure bilirubin levels in every baby either at the recognition of jaundice or before	<u>Incidence of severe hyperbilirubinaemia</u>	Retrospective cohort study with exclusion criteria not defined Baseline characteristics of

Year: 2006 Country: USA 51	Evidence Level: II	2002. All babies delivered at = 35 weeks gestation within a private health care organization involving 18 hospitals during two time periods: **Group 1:** before the program started from 01 March 2001 to 31 December 2002, **Group 2:** after the program started from 01 January 2003 to 31 December 2004. Exclusion: Not defined	discharge from hospital. Two hospitals used TcB (BiliChek) levels while others used TSB. Bilirubin levels plotted on the hour-specific nomogram and levels = 40th centile notified to the relevant health care provider and baby managed according to his/her discretion. After first 3 months percentile tracks of the nomogram modified since a large number of babies had bilirubin levels in the high or intermediate-high zones	*TSB levels ≥ 342 micromol/L* Group 1 - 1:77 Group 2 - 1:142 $p<0.0001$ *TSB levels ≥ 428 micromol/L* Group 1 - 1:1522 Group 2 - 1:4037 $p<0.005$ *TSB levels ≥ 513 micromol/L* Group 1 - 1:9742 Group 2 - 1:17494 $p=0.24$ Incidence of hospital readmissions for hyperbilirubinaemia Group 1 - 0.55% Group 2 - 0.43% $p<0.005$	the two groups not compared Confounding variables not adjusted

Madan A Year: 2004 Country: USA 52	Study type: Retrospective observational study Evidence level: III	All babies (N = 4,450) of which those born to blood type O or Rh negative mothers (N = 2,443) Mean GA: Not reported Mean BW: Not reported Gender: Not reported Ethnicity: Asian = 45.9% White = 36.8% Exclusion criteria: None	Test: Direct Antiglobulin Test (DAT) on cord blood. Reference standard: phototherapy / re-admission for phototherapy	Prevalence of DAT positive 7.9% (193/2,443) Rate of phototherapy: among DAT positive cases was 18.6% (36/193). Rates for re-admission for phototherapy: among tested babies: 1.1% (26/2,443) among untested babies : 0.9% (19/2,097) Odds Ratio (OR): 1.18 (95% CI 0.65 – 2.13)	Data not reliable: authors reported not determining the number of DAT negative who were treated for jaundice before readmission Sample: Selective Blinding: None
Leistikow EA Year: 1995 Country: USA	Study type: Health economics study Evidence level: III	All patients in Neonatal Intensive Care Unit; babies with clinical jaundice; babies with Rh negative mothers and/or positive maternal antibody screenings; no available maternal blood	Test: Direct Antiglobulin Test (DAT) on cord blood. Reference standard: Readmission for jaundice	Prevalence of DAT positive: Not reported Percentage of babies tested Among universal testing (2,253/4,003) 56.3% among selective testing (1,048/4,498)	Small study No definition on readmission for hyperbilirubinaemia given Sample: Non-selective

53		Mean GA: Not reported Mean BW: Not reported Gender: Not reported Ethnicity: Not reported Exclusion: Not reported		23.3% Rate of readmission for hyperbilirubinaemia among universally tested babies 0.4 (15/4,003) among selectively tested babies 0.3 (15/4,498) Odds Ratio (OR) 1.12 (95% CI 0.56 – 2.30)	Blinding: None
Madlon-Kay DJ Year: 1992 Country: USA 54	Study type Retrospective cohort study: Evidence Level: III	All babies in normal nursery cared for by family practice service were included (N = 301) Sample was split between those tested automatically (N = 113) and those tested selectively (N = 188) Mean GA: 39.4 weeks Mean BW: 3344 grams	Test: Direct Antiglobulin Test (DAT) on cord blood. Reference standard: Need for phototherapy (no clear definition)	<u>Overall Prevalence of DAT positive</u> 9.0% (27/301) Overall rate of phototherapy 12/301 (3.9%) Rates of phototherapy among universally tested babies 4/113 (3.5%)	Small sample Test and reference standard not described in details Blinding: None

		Gender: Males = 50.5% Ethnicity: White = 44.5% Black = 16.3% Asian = 17.9% Other = 21.3% Exclusion criteria: babies in intensive care		among selectively tested babies 8/188 (4.3%) Odds Ratio (OR) 0.83 (95%CI: 0.24 – 2.81) Rates of readmission for phototherapy among universally tested babies 2/113 (1.8%) among selectively tested babies 1/188 (0.5%) Odds Ratio (OR) 3.36 (0.32 – 37.58)	

What is the best method of recognizing hyperbilirubinaemia?

Evidence table – Recognition

Bibliographic details	**Study type & Evidence level**	**Patient characteristics**	**Test, Reference Standard, Threshold for a positive test**	**Results**	**Reviewers Comments**
Riskin A; Year: 2008 Country: Israel 55	Study Type: Diagnostic study Evidence Level: Ib	Healthy full term and late pre-term babies (≥ 35 weeks) examined for clinical jaundice before discharge (days 2 to 5 of life) in a hospital N = 1,129, total observations = 3,532, mean BW 3298 ± 462 grams, mean GA 39.5 ± 1.4 weeks, mean time of assessment 62 ± 24 hours (median 55 hours; range 9 to 252 hours) Gender: Males = 52.3%	Test: Visual assessment of jaundice (BiliEye) by experienced observers (total 23 observers – 5 neonatologists and 17 nurses, mean experience 11.4 ± 10.2 yrs). No. of observations per observer were record in 1,195 encounters with a mean of 3.0 ± 1.8 observers. The observers were identified by code numbers and unaware of laboratory TSB values and BiliEye values made by other observers.	Correlation of visual assessment of TSB levels with lab TSB (Pearson correlation coefficient, N = 3532 observations) *All observers* Weighted r = 0.75, p<0.001 kappa (weighted) = 0.363 *Each observer separately (range)* r = 0.51 to 0.88 kappa = 0.11 to 0.52 Accuracy of BiliEye for determining TSB	Unselected population with defined exclusion criterion Test & Reference test described in detail Test and reference test carried out within one hour Blinding – yes Funding: None specified

		Ethnicity Majority reported as Ashkenazi or Sephardic Jews (73%) or Arabs (26%) Exclusion: babies with < 50 observations, visual assessment done after starting phototherapy	<u>Reference standard:</u> Laboratory TSB levels within 1 hr Analysis: After determining correlation between BiliEye and lab TSB, the values were grouped into risk zones according to Bhutani nomogram. Accuracy of BiliEye in determining TSB levels (or degree of hyperbilirubinaemia) evaluated. Ability of BiliEye to detect significant hyperbilirubinaemia (defined as zones C+D on nomogram) analyzed by ROC curve – after correcting for postpartum age and GA	<u>values</u> (after grouping Zones B, C & D together versus Zone A) Sensitivity: 337/567 (59.4%) Specificity: 2627/2965 (88.6%) PPV: 337/675 (49.9%) NPV: 2627/2857 (91.9%) *False negative rate of BiliEye* Zone A: 230/2857 (8.1%) Zone C + D: 67/109 (61.5%) Zone D only: 13/15 (86.7%) <u>Difference between BiliEye and laboratory TSB values</u> *All observers* MD = 0.11 $\pm$ 2.17	

				Each observer separately P < 0.001 for both the mean values and absolute values Diagnostic accuracy of BiliEye in detecting hyperbilirubinaemia Area ROC = 0.82 *Best AROC* 0.93 for observations at > 60 hours in babies ≥ 37 weeks GA *Worst AROC* 0.64 for observations at < 36 hours 0.61 for babies < 37 weeks	
Moyer VA; Year: 2000	Study Type: Diagnostic study Evidence Level:	Full-term healthy babies (BW > 2000 grams and GA> 36 weeks) in well-newborn nursery of an urban public hospital, in whom TSB was measured because of clinical jaundice, Rh-negative mother or positive maternal	Visual observation by two experienced staff (paediatric residents, paediatric nurse practitioners, paediatric physicians) regarding	Agreement between observers on presence/absence of icterus at different sites (Weighted Kappa with 95%CI)	Unselected population Reference test not described adequately Test and reference test

Country: USA 56	II	Coomb's test. N = 122, GA: > 36 weeks BW > 2,000 grams mean age = 2 days (range 8 to 168 hours) Gender: Males = 54.1% Ethnicity Not reported Exclusion: babies having previous TSB determination and under phototherapy	a) Subjective assessment of presence/absence of icterus at different sites b) Estimated TSB levels Reference standard: Laboratory TSB levels within 1 hr	Face & neck: 0.16 (-0.02 to 0.34) Neck to nipple line: 0.15 (0.01 to 0.29) Nipple line to umbilicus: 0.23 (0.09 to 0.38) Umbilicus to groin: 0.19 (0.05 to 0.34) Upper legs: 0.20 (0.06 to 0.35) Weighted K not statistically significant for other sites – Lower legs, Soles, Arms, Palms, Tip of nose and palate Correlation of estimated TSB levels with lab TSB (Pearson correlation coefficient) Observer 1: r = 0.43 Observer 2: r = 0.54 Accuracy of clinical icterus in lower chest (nipple line to umbilicus) in detecting TSB	carried out within one hour Blinding – yes Funding: Not reported

				<u>> 205 micromol/L (N = 243 observations)</u> Sensitivity: 97.1% (67/69) Specificity: 19.0% (33/174) PPV: 32.2% (67/208) NPV: 94.3% (33/35)	
Madlon-Kay DJ; Year: 2001 Country: USA 57	Study Type: Diagnostic study Evidence Level: II	Newborn babies delivered in a hospital with follow-up visit at home by Home Health Nurses. (N = 164, mean GA: Not reported mean BW: Not reported mean age at assessment 6.4 + 2.5 days) Gender: Not reported Ethnicity (nurse determination) white = 60% black = 18%	1) Clinical assessment by nurses with their usual method (e.g blanching skin, judging degree of yellowness with caudal progression, looking for jaundice at sclera, gums, nose) 2) Caudal progression of jaundice alone as assessed by nurses 3) Ingram Icterometer reading from nose Threshold for diagnostic accuracy – reading > 2.5 <u>Reference standard:</u> Laboratory	<u>TSB levels (micromol/L)</u> *All babies (N = 164)* Mean (sd) 125 (80) Range: 12 to 345 *Babies assessed to be jaundiced by nurses (N = 82)* Mean (sd): 180 (68.4) *Babies assessed not to be jaundiced by nurses (N = 82)* Mean (sd): 72 (46) <u>Comparison 1:</u>	Unselected population Test & Reference test described in detail Test and reference test carried out within one hour Blinding – not specified Data not extractable for calculating exact values of TP, FP, TN & FN Funding: Ramsey Foundation

		Asian = 6% Hispanic = 7% Other = 9% Exclusion: babies who were in intensive care nursery or received phototherapy, Also babies whose mothers lived more than 10 miles from hospital or were not proficient in English Babies examined by 12 home health nurses.	TSB levels within 1 hr	*Correlation of estimated TSB levels with lab TSB (Pearson correlation coefficient, N = 82 where sampling done)* $r = 0.61$, $p < 0.01$ <u>Comparison 2:</u> *Correlation of estimated TSB levels with lab TSB (Pearson correlation coefficient, N = 82 where sampling done)* $r = 0.47$, $p < 0.01$ *Accuracy of test (caudal progression to nipple line) in detecting TSB > 205 micromol/L (N = Not reported)* Sensitivity: 76% Specificity: 60% <u>Comparison 3:</u> *Correlation of estimated TSB levels with lab TSB (Pearson correlation coefficient,*	

				N = 82 where sampling done) r = 0.48, p < 0.01 *Accuracy of test in detecting TSB > 205 micromol/L (N = Not reported)* Sensitivity: 75% Specificity: 72%	

Riskin A; Year: 2003 Country: Israel 58	Study Type: Diagnostic study Evidence Level: II	Full term babies (37-42 weeks) with clinical jaundice in the nursery of a tertiary care hospital. Includes babies with ABO incompatibility and G-6PD deficiency. N = 283 mean age at assessment 63.8 ± 21.6 hours mean GA: 39.5 ± 1.5 weeks mean BW: 3223 ± 484 grams Gender: Males = 51.2% Ethnicity Majority reported as Jews (76%) or Arabs (24%) Exclusion: not defined	Visual observation by one of four attending neonatologists before discharge of baby from the nursery regarding a) Assessment of clinical jaundice severe enough to draw blood sample b) Estimated TSB levels Reference standard: Laboratory TSB levels within 30 mins	Correlation of estimated TSB levels with lab TSB (Pearson correlation coefficient) All physicians (N = 283): r = 0.68, p<0.001 Physician 1 (N = 74) r = 0.79, p < 0.001 Physician 2 (N = 62) r = 0.64, p < 0.001 Physician 3 (N = 69) r = 0.70, p < 0.001 Physician 4 (N = 78) r = 0.62, p < 0.001	Selected population with no exclusion criterion Test & Reference test described in detail Test and reference test carried out within one hour Blinding – yes Data not extractable for calculating TP, FP, TN & FN values

Madlon-Kay DJ; Year: 1997 Country: USA 59	Study Type: Diagnostic study Evidence Level: II	Babies with age >2 days in a normal newborn nursery.in a teaching hospital (N = 171 mean GA 39 weeks) mean BW: Not reported Gender: Not reported Maternal ethnicity white = 50% black = 24% Asian = 13% Hispanic = 9% Other = 4% Exclusion: babies who received phototherapy, and whose parents were unable to read and understand the instruction form	1) Clinical estimation of degree of jaundice and cephalo-caudal progression by nurses and physicians by blanching the skin. (36 nurses, 20 family physicians and 4 paediatricians) 2) Clinical assessment of jaundice by the parents after receiving written and verbal instructions about the process (147 parents with 81% having English as the primary language and 46% having completed high school) 3) Ingram Icterometer readings from nose (N = 132 readings) Reference standard: Laboratory TSB levels within 1 hr Correlation between the estimated and the observed TSB values determined before and after adjusting for various factors	Prevalence of hyperbilirubinaemia (TSB = 205 micromol/L 11/89 (12.3%) Correlation of estimated TSB levels with lab TSB values after adjusting for various confounding factors like level of training, race, etc (Pearson correlation coefficient) *Nurse estimate of TSB* r = 0.52, p < 0.001 *Nurse assessment of cephalo-caudal progress* r = 0.48. p < 0.05 *Physician estimate of TSB* r = 0.55, p < 0.05 *Physician assessment of cephalo-caudal progress* r = 0.35. p > 0.05	Study population selected by convenience sampling Test & Reference test described in detail Test and reference test carried out within one hour, but reference test (laboratory TSB) not conducted in all babies (89/171) Blinding – yes Data not extractable for calculating exact values of TP, FP, TN & FN

				Parent assessment of cephalo-caudal progress r = 0.71, p < 0.01 *Icterometer* r = 0.57, p = 0.002	
Szabo P; Year: 2004 Country:	Study Type: Diagnostic study Evidence Level: II	Healthy preterm babies 34-37 weeks with BW > 2000 grams and no older than 6 days in maternity ward and intermediate care neonatal unit. N = 69, median GA: 35.7 weeks – range 34 to	1) Clinical assessment by nurses and primary investigator using Kramer criterion 2) TcB using Minolta JM-102 at the sternum (mean of two readings used for	<u>Comparison 1:</u> *Correlation of estimated TSB levels with lab TSB (Pearson correlation coefficient, N = 107 observations)* By nurses	Unselected population Test & Reference test described in detail Test and reference test carried out within one hour Blinding – not specified Data not extractable for

Switzerland 61		36.9 weeks median BW 2530 grams – range 2050 to 3630 grams Gender: Not reported Ethnicity white = 87% black = 4% Asian = 7% Other = 2% Exclusion: jaundice above zone 3 of Kramer scale within 48 hours, positive DCT, BW < 10^{th} centile for GA, any sign or symptom of illness, phototherapy already started	analysis) 3) TcB using BiliChek at the forehead and sternum (mean of 5 readings used for analysis) <u>Reference standard:</u> Laboratory TSB levels within 30 min. Mean of two samples used for analysis. For diagnostic accuracy: Area under ROC curve calculated for detecting TSB > 190	$R^2 = 0.22$, $p < 0.01$ By primary investigator $R^2 = 0.20$, $p < 0.01$ *Diagnostic accuracy for detecting TSB > 190 micromol/L (Area under ROC curve, N = Not reported)* By nurses Area = 0.73 By primary investigator Area = 0.70 Kappa = 0.48 <u>Comparison 2:</u> *Correlation of JM-102 with lab TSB levels (Pearson correlation coefficient, N = 107 observations)* $R^2 = 0.76$, $p < 0.01$ Difference to TSB: 56 $\pm$ 28 micromol/L	calculating values for TP, FP, TN & FN

				Diagnostic accuracy for detecting TSB > 190 micromol/L (Area underROC curve, N = Not reported) Area = 0.96 Comparison 3: **At forehead** *Correlation of BiliChek with lab TSB levels (Pearson correlation coefficient, N = 107 observations)* R^2 = 0.45, p < 0.01 Difference to TSB: -8 $\pm$ 33 micromol/L *Diagnostic accuracy for detecting TSB > 190 micromol/L (Area underROC curve, N = Not reported)* Area = 0.88 **At sternum** *Correlation of BiliChek with lab TSB levels (Pearson correlation coefficient, N = 107 observations)*	

				R^2 = 0.59, p < 0.01 Difference to TSB: 10 ± 31 micromol/L *Diagnostic accuracy for detecting TSB > 190 micromol/L (Area underROC curve, N = Not reported)* Area = 0.89	
Szabo P; Year: 2004 Country: Switzerland 60	Study Type: Diagnostic study Evidence Level: II	Healthy full-term babies (37-41 weeks) with BW > 2000 grams and no older than 6 days. (N = 140, 92 white and 48 non-white babies, median BW 3320 grams) range 2050 to 4400 grams median GA: 39 weeks – range 37 to 41.9 weeks Gender: Not reported Ethnicity white = 66%	1) Clinical assessment by nurses and primary investigator using Kramer criterion 2) TcB using Minolta JM-102 at the sternum (higher of two readings used for analysis) 3) TcB using BiliChek at the forehead and sternum (mean of 5 readings used for analysis) <u>Reference standard:</u> Laboratory	<u>Comparison 1:</u> *Correlation of estimated TSB levels with lab TSB (Pearson correlation coefficient, N = not reported)* For white babies R^2 = 0.74 (by nurse) R^2 = 0.70 (by investigator) For non-white babies R^2 = 0.71 (by nurse)	Unselected population Test & Reference test described in detail Test and reference test carried out within one hour Blinding – not specified Data not extractable for calculating values of TP, FP, TN & FN

		Asian = 13% Other = 21% Exclusion: Haemolysis jaundice within first 36 hours phototherapy	TSB levels within 30 min For diagnostic accuracy: Area under ROC curve calculated for detecting TSB > 250 micromol/L	R^2 = 0.65 (by investigator) *Diagnostic accuracy for detecting TSB > 250 micromol/L (Area underROC curve, N = Not reported)* Area = 0.84 <u>Comparison 2:</u> *Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = Not reported)* R^2 = 0.82, p < 0.01 *Diagnostic accuracy for detecting TSB > 250 micromol/L (Area under ROC curve, N = Not reported)* Area = 0.98 <u>Comparison 3 (at forehead):</u> *Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = Not reported)*	

				$R^2 = 0.79$, $p < 0.01$ *Diagnostic accuracy for detecting TSB > 250 micromol/L (Area under ROC curve, N = Not reported)* Area = 0.92	

Crofts DJ; Year: 1999 Country: UK 62	Study Type: Non-diagnostic study (Project report) Evidence Level: III	Mothers and their newborn babies born and resident of Sheffield and who were routinely visited by the health visitor at 28 days of age. Phase 1: (N = 109 parent-baby pairs, total stool observations = 5053) Mean BW: Not reported Mean GA: Not reported Gender: Males = 56.9% Ethnicity: Not reported Phase 3: (N = 3629 mother-baby pairs)	Phase 1: Inspection of stools, by parents, from healthy babies and babies with cholestatic liver disease during the first 28 days of age to devise a stool colour chart using 20 colours Phase 2: development of stool chart – six most commonly selected stool colours from each of main colour groups together with three pale colours used to develop a stool chart. Phase 3: Assess specificity of colour chart – charts given to all mothers at first health visitor visit (at 10-14 days), and information collected at second visit of health visitor (at 28 days). Babies with suspicion of jaundice or history of passing pale stools referred for further investigation	Incidence of jaundice *Related to breastfeeding* 3.4% (95%CI 2.9%, 4.1%) *At 28 days in breast-fed babies* 9.2% (95%CI 7.8%, 11.0%) % with abnormal LFT (N = 60) *Abnormal GGT and ALT* 38.3% (23/60) *Abnormal Alk. phosphate* 70% (42/60) Reasons for non-referral of babies with prolonged jaundice (N = 14) 9 = babies well and thriving 2 = confusion between midwife and health visitor 2 = family moving out 1 = refusal	Report of a community programme (non-diagnostic study) Unselected population No demographic details reported

Bilgen H; Year: 1998 Country: Turkey 63	Study Type: Diagnostic study Evidence Level: II	Healthy term babies with jaundice aged more than 1 day but less than 5 days in a hospital. N = 96 mean BW 3380 ± 419 grams mean GA: 39.6 ± 1.4 weeks age at presentation: range 1 to 5 days Gender: Males = 58% Ethnicity: Not reported Exclusion: not received phototherapy	1) Ingram Icterometer on the nose Threshold: reading ≥ 33 for best accuracy results 2) TcB using Minolta JM-102 on the forehead Threshold: reading > 13 for best accuracy results Reference standard: Laboratory TSB levels within 30 min	Prevalence of TSB > 220 micromol/L = 18% (17/96) Comparison 1: *Correlation of JM-102 with lab TSB levels (Pearson correlation coefficient, N = 96)* r = 0.83, p < 0.01 *Diagnostic accuracy for detecting TSB > 220 micromol/L* Sensitivity: 100% (17/17) Specificity: 55.7% (35/79) PPV: 32.7% (17/52) NPV: 100% (44/44) Comparison 2: *Correlation of Icterometer with lab TSB levels (Pearson correlation coefficient, N = 96)* r = 0.78, p < 0.01	Selected population Test & Reference test not described in detail Test and reference test carried out within one hour Blinding – yes

				Diagnostic accuracy for detecting TSB > 220 micromol/L Sensitivity: 100% (17/17) Specificity: 48.1% (38/79) PPV: 29.3% (17/58) NPV: 100% (38/38)	
Merritt KA; Year: 1994 Country: USA 64	Study Type: Diagnostic study Evidence Level: II	Preterm babies with jaundice in a hospital. N = 90 mean BW 1676 grams, mean GA 31.7 weeks age at presentation: Not reported Gender: Not reported Ethnicity White = 95% Other = 5%	1) Gosset Icterometer on the nose by two experienced and one inexperienced observer Reference standard: Laboratory TSB levels within 30 min	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = number of observations) All infants (N = 296) r = 0.72, p < 0.01 Experienced observer 1 (N = 239) r = 0.71, p < 0.01 Experienced observer 2 (N = 166) r = 0.75, p < 0.01	Selected population Test & Reference test described in detail Test and reference test carried out within one hour Blinding – yes Data not extractable for calculating values of TP, FP, TN & FN

		Exclusion: not defined		Inexperienced observer r = 0.63, p < 0.01	
Hamel BCJ; Year: 1982 Country: Tanzania 65	Study Type: Diagnostic study Evidence Level: III	Newborn babies with clinical jaundice admitted for various reasons to neonatal unit of a medical centre N = 70 Mean BW: Not reported GA: Range 30 to 42 weeks Postnatal age: Range 2 to 14 days Gender: Not reported Ethnicity: Black = 100% Exclusion: not defined	Gosset Icterometer reading by blanching the gum Reference standard: Blood drawn for laboratory TSB levels at the same time	Correlation of Icterometer readings with lab TSB levels (Pearson correlation coefficient) r = 0.91, p < 0.01	Unselected population Test & Reference test not described in detail Test and reference test carried out simultaneously (exact timing not specified) Blinding – not specified Data not extractable for calculating values of TP, FP, TN & FN
Chaibva NT; Year: 1974	Study Type: Diagnostic study	Newborn babies with clinical jaundice N = 55 infants and 125 readings	Gosset Icterometer reading (site not specified)	Correlation of Icterometer readings with lab TSB levels (Pearson correlation coefficient)	Unselected population Test & Reference test not described in detail

Country: Rhodesia 66	Evidence Level: III	BW: Range 1050 to 3925 grams GA: Not reported Postnatal age: Range 2 to 24 days Gender: Not reported Ethnicity: Black = 100% Exclusion: not defined	Reference standard: Laboratory TSB levels (timing not specified)	r = 0.96, p < 0.001	Test and reference test carried out at same time (exact timing not specified) Blinding – yes Data not extractable for calculating values of TP, FP, TN & FN
Briscoe L; Year: 2002 Country: UK 49	Study Type: Diagnostic study Evidence Level: II	Babies > 34 weeks who were having blood taken for any reason, mostly done for clinical jaundice. N = 303 median BW 3267 grams - range 1800-5008 median GA 39 weeks - range 34-42 median age at presentation: 3 – range 0 to 13 days Gender: Not reported	TcB reading using Minolta JM-102 at the forehead (mean of 3 readings used for analysis) Reference standard: Laboratory TSB levels measured concurrently For diagnostic accuracy: Area under ROC curve calculated for detecting TSB > 249	Correlation of JM-102 with lab TSB levels (Pearson correlation coefficient, N = 303) r = 0.76, p < 0.0001 Diagnostic accuracy of JM-102 for detecting TSB > 249 micromol/L (N = 303) Area under ROC = 0.89 *Predictive accuracy of JM-102 value 19.9*	Unselected population Test & Reference test described in detail Test and reference test carried out within one hour Blinding – not specified Data not extractable for calculating values of TP, FP, TN & FN

		Ethnicity White: 94.7% Prevalence of TSB > 300 micromol/L = 3.3% (10/303) Exclusion: babies who had previously received phototherapy	micromol/L	*(highest accuracy from ROC curve)* Sensitivity: 86% (81-89%) Specificity: 78% (73-83%) PPV: Not reported NPV: Not reported	
Carbonell X; Year: 2001 Country: Spain 30	Study Type: Diagnostic study Evidence Level: II	Healthy term babies N = 2004 – 610 in phase one + 1394 in phase 2 mean BW 3230 ± 491 grams mean GA 39 weeks Gender: Males = 50.7% Ethnicity Not reported In first phase (N = 610), cord bilirubin (UCB) at birth and TcB with Minolta JM-102 measured at 24 hours, 48 hours & 60-96 hours of life.	Test: 1. Umbilical cord bilirubin (UCB) measured at birth (threshold value: ≥ 37 micromol/L) ROC curve used to find the best cut-off value of UCB. 2. TSB (in phase 1 & 2) and TcB (phase 1 only) measured at 24 hours (threshold value for TSB = 102 micromol/L and for TcB > 11) 3. TSB and TcB (in phase 1 & 2) measured at 48 hours (threshold value for TSB = 154 micromol/L and for TcB > 13)	Correlation of TcB levels with lab TSB levels for Sternal vs. Forehead site (Pearson correlation coefficient) At < 24 hours (N = 120) *Sternum Forehead* 0.81 0.77 At 24-48 hours (N = 126) *Sternum Forehead* 0.89 0.83 At > 48 hours (N = 412) *Sternum Forehead*	Unselected population but no exclusion criterion Test & Reference test described in detail Reference test a standard one Test and reference test carried out within one hour Blinding – not specified

		Additionally TSB was done for all at 60-96 hours. On 169 babies TSB also measured at 24 & 48hours In second phase (N = 1,394), TcB and lab TSB values obtained to find accuracy of TSB and TcB at 24hours and 48 hours to predict hyperbilirubinaemia. <u>Prevalence of TSB > 290 micromol/L</u> = 2.9% in phase 1 (18/610) and 3.25% in phase 2 (46/1324) Exclusion: not defined	TcB reading using Minolta JM-102 at the forehead and the sternum (mean of 3 measurements recorded at each site used for analysis) <u>Reference standard:</u> Laboratory TSB measured on Day 3 - 4 TSB = 290 micromol/L taken as indicative of hyperbilirubinaemia	0.94 0.83 <u>Diagnostic accuracy of TcB for detecting TSB > 222 micromol/L</u> Sensitivity: 98% Specificity: 72% <u>Diagnostic accuracy for predicting TSB = 290 micromol/L</u> *Prevalence of TSB = 290 micromol/L* 2.9% in phase 1 (18/610) and 3.25% in phase 2 (46/1324) **1. For UCB (threshold = 37 micromol/L)** Sensitivity: 4/18 (22.2%) Specificity: 537/567 (94.7%) PPV: 4/34 (11.7%) NPV: 537/551 (97.4%) **2. At 24 hours** *For TcB in phase 1 (threshold > 11*	

				Reflectance Units) Sensitivity: 15/18 (83.3%) Specificity: 368/556 (66.2%) PPV: 15/203 (7.4%) NPV: 368/371 (99.2%) *For TSB in phase 1 (threshold = 102 micromol/L)* Sensitivity: 7/7 (100%) Specificity: 74/162 (45.7%) PPV: 7/95 (7.4%) NPV:74/74 (100%) *For TSB in phase 2 (threshold = 102 micromol/L)* Sensitivity: 25/25 (100%) Specificity: 239/398 (60%) PPV: 25/95 (26.3%) NPV: 239/239 (100%) **2. At 48 hours** *For TcB in phase 1 (threshold > 13*	

				reflectance units) Sensitivity: 17/18 (94.4%) Specificity: 288/556 (51.7%) PPV: NPV: *For TcB in phase 2 (threshold > 13 reflectance units)* Sensitivity: 45/46 (97.8%) Specificity: 262/819 (32.0%) PPV: 45/602 (7.5%) NPV: 262/263 (99.6%) *For TSB in phase 1 (threshold = 154 micromol/L)* Sensitivity: 11/11 (100%) Specificity: 102/158 (64.6%) PPV: 11/67 (16.4%) NPV: 101/102 (100%) *For TSB in phase 2 (threshold = 154 micromol/L)*	

				Sensitivity: 45/46 (97.8%) Specificity: 348/774 (45%) PPV: 45/471 (9.5%) NPV: 348/349 (99.7%)	
Knudsen A; Year: 1989 Country: Denmark [67]	Study Type: Diagnostic study Evidence Level:III	Babies in a newborn nursery were eligible if a visible jaundice was noted in first 5 days of life N = 76, Mean BW: Not reported Median GA: Not reported Gender: Not reported Ethnicity: Not reported Exclusion: None	Test: TcB reading from the forehead using JM-102 Reference standard: Laboratory TSB method measured on blood collected at the same time as TcB.	Correlation of TcB levels with TSB levels (Pearson correlation coefficient, N = 76) *Forehead* r = 0.83; p < 0.0001	Unselected population Test & Reference test not described in detail Test and reference test carried out within one hour Blinding – not specified No demographic details reported
Karrar Z;	Study Type:	Healthy term babies with visible	TcB using Minolta JM-101 on the	Correlation of TcB levels with lab TSB	Unselected population

Year: 1989 Country: Saudi Arabia 68	Diagnostic study Evidence Level: III	jaundice aged between 4 and 10 days. N = 155 Mean BW: Not reported Mean GA: Not reported Gender: Not reported Ethnicity Saudi 100% Prevalence of TSB > 214 micromol/L = 31.6% (49/155) Exclusion: preterm infants, ill newborns, those requiring phototherapy or exchange transfusion	forehead – single measurement made Reference standard: Laboratory TSB levels at the same time as TcB measured	levels (Pearson correlation coefficient, N = 155) r = 0.82, p < 0.01 Diagnostic accuracy of TcB (threshold value > 21 reflectance units) for detecting TSB > 214 micromol/L Sensitivity: 36/49 (73.5%) Specificity: 95/106 (89.6%) PPV: 36/47 (76.6%) NPV: 95/108 (88.0%)	Test & Reference test not described in detail Test and reference test carried out within one hour Blinding – not specified
Maisels MJ;	Study Type: Diagnostic study	Randomly selected full term White babies in a well baby nursery	TcB using Minolta JM-102 from the forehead and the sternum	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient)	No exclusion criterion Test & Reference test

Year: 1982 Country: USA 69	Evidence Level: II	N = 157 Mean BW: Not reported Mean GA: Not reported Gender: Not reported Ethnicity Not reported Exclusion: not defined Prevalence of TSB > 221 micromol/L = 7/157 (4.5%)	Measurements routinely made on the 3rd day except in 11 infants where earlier sampling done Reference standard: Laboratory TSB levels at the same time as TcB measured	*At forehead (157 observations)* r = 0.93, p < 0.0001 *At mid-sternum (135 observations)* r = 0.93, p < 0.0001 Diagnostic accuracy of TcB (Sternum threshold value > 23 reflectance units) for detecting TSB > 221 micromol/L Sensitivity: 4/4 (100%) Specificity: 126/131 (96.2%) PPV: 4/9 (44.4%) NPV: 126/126 (100%) Diagnostic accuracy of TcB (Forehead threshold value > 24 reflectance units) for detecting TSB > 221 micromol/L Sensitivity: 7/7 (100%) Specificity: 145/150 (96.7%)	described adequately Test and reference test carried out within one hour Blinding – not specified

				PPV: 7/12 (58.3%) NPV: 145/145 (100%)	
Tsai LT; Year: 1988 Country: China 70	Study Type: Diagnostic study Evidence Level: III	Term healthy babies > 37 weeks and less than 7 days old who had jaundice or TSB measurement N = 98 paired observations from each of the 8 sites = 178 mean BW: Not reported mean GA: Not reported Gender: Not reported Ethnicity Chinese (100%) Exclusion: not defined Prevalence of TSB > 222 micromol/L = 19.6% (35/178 – site forehead)	TcB using Minolta JM-102 Measurements made at the time of sampling from 8 sites – forehead, cheek, sternum, abdomen, upper back, lower back, palm and sole. Reference standard: Laboratory TSB levels at the same time as TcB measured	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 178) *Forehead* r = 0.87, p < 0.001 *Cheek* r = 0.76, p < 0.001 *Sternum* r = 0.78, p < 0.001 *For all other sites* r from 0.47 to 0.76 Diagnostic accuracy of TcB (threshold value > 16 relectance units) for detecting TSB > 222 micromol/L	No exclusion criterion Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified

				Sensitivity: 19/21 (90.5%) Specificity: 141/157 (89.8%) PPV: 19/35 (54.3%) NPV: 141/143 (98.6%)	
Maisels MJ; Year: 2004 Country: USA 71	Study Type: Diagnostic study Evidence Level: II	Convenience sample of newborn babies ≥ 35 weeks in the well-baby nursery of 3 hospitals. N = 849 Mean BW: Not reported Mean GA: Not reported Gender: Not reported Ethnicity white = 59.2% black = 29.8% other = 10.9% Prevalence of TSB > 257 micromol/L = 3.3% (28/849) Exclusion: babies who had received	TcB using Minolta JM-103 from the mid-sternum Triplicate measurements made in two hospitals while only single made in the third, but single TcB measurement taken for each baby for data analysis. Reference standard: Laboratory TSB levels within 1 hour of TcB measurement Area under ROC curve (AROC) calculated for detecting TSB > 170, 222 and 255 micromol/L	Correlation of TcB levels with lab TSB levels and area under ROC curve (Pearson correlation coefficient, AROC for TSB > 222 micromol/L) *All infants (N = 849)* r = 0.91, p < 0.001 AROC = 0.96 *White infants (N = 503)* r = 0.95, p < 0.001 AROC = 0.96 *Black infants (N = 253)* r = 0.82, p < 0.001 AROC = 0.97	No exclusion criterion Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified Data not extractable for calculating values of TP, FP, TN & FN for different thresholds

		phototherapy		*Other infants (N = 93)* r = 0.92, p < 0.001 AROC = 0.96 <u>% of infants with difference between TSB & TcB levels of > 34 micromol/L (overestimation by TcB)</u> *Difference 34 to 50 micromol/L* White – 4.0% Black – 24.1% Others – 5.4% *Difference 51 to 67 micromol/L* White – 2.0% Black – 10.7% Others – 2.2% *Difference > 68 micromol/L* White – 0% Black – 6.7% Others – 1.1%	

Schmidt ET et al; Year: 2009 Country: USA 73	Study Type: Diagnostic study Evidence Level: II	Convenience sample of newborn babies ≤ 34 weeks in a NICU of 1 hospital. N = 90 Range of BW: 370 – 2989 grams Range GA: 24 – 34 weeks Gender: Males = 56.7% Ethnicity white = 11.1% black = 18.9% hispanic = 70.0% Exclusion: Hydrops fetalis Severe haemolytic disease Non-viable Had receive or were receiving phototherapy or an exchange transfusion	TcB using Minolta JM-103 from the sternum, and included a single determination and a device –calculated mean of 5 determinations TCB was carried out within 45 minutes of TSB./ Reference standard: Laboratory TSB levels Sensitivity and specific of TCB > 68, 103, 137 micromol/L	Correlation of TcB levels with lab TSB levels *All groups* *R = 0.88, P <0.001* *Group 1 GA 24 – 28 weeks* r = 0.92 *Group 2 GA 29 – 31 weeks* r = 0.90 *Group 3 GA 32 –34 weeks* r = 0.79 Bland-Altman analysis for mean difference between TCB and TSB *Group 1 GA 24 – 28 weeks* -19 ± 32 micromol/l *Group 2 GA 29 – 31 weeks* -14 ± 22 micromol/L	Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified

				Group 3 GA 32 –34 weeks -17 $\pm$ 27 micromol/L	
Engle WD; Year: 2005 Country: USA [72]	Study Type: Diagnostic study Evidence Level: II	Term and near term neonates who had been discharged from the hospital and evaluated during first week postnatally in a follow-up centre. N = 121 median BW: 3280 grams – range 2265 to 4590 median GA: 40 weeks – range 35 to 41 median age at TSB: 91 hours – range 51 to 166 Gender: Males = 56.2%) Ethnicity Hispanic = 92% Black = 3% Asian = 3%	TcB using Minolta JM-103 from the sternum – single measurements taken. Reference standard: Laboratory TSB levels within 30 minutes of TcB measurement Diagnostic accuracy of TcB (various thresholds) calculated for detecting TSB > 255, > 272, > 290 and > 306 micromol/L	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 121) r = 0.77, p < 0.001 Bland Altman analysis for difference between TSB and TcB MD = 27 micromol/L Diagnostic accuracy of TcB (threshold value > 205 micromol/L for detecting TSB > 255 micromol/L Sensitivity: 52/57 (91.2%) Specificity: 34/64 (53.1%) PPV: 52/82 (63.4%)	Exclusion criterion not defined Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified

		White = 2% Prevalence of TSB > 255 micromol/L = 47% (57/121) Exclusion: not defined		NPV: 34/39 (87.2%)	
Sanpavat S; Year: 2004 Country: Thailand [74]	Study Type: Diagnostic study Evidence Level: II	Term and near term clinically healthy neonates ≥ 36 weeks with visible jaundice which necessitated TSB determination. N = 388 mean BW 3117 ± 425 grams mean GA: Not reported Postnatal age: range 11 to 216 hours Gender: Males = 57.5% Ethnicity Not reported Prevalence of TSB > 255 micromol/L = 2.8% (13/460)	TcB using Minolta JM-103 from the forehead Mean of three measurements taken for data analysis. Reference standard: Laboratory TSB levels within 10-15 minutes of TcB measurement Diagnostic accuracy of TcB (various thresholds) calculated for detecting TSB > 170, > 204, > 222 and > 255 micromol/L	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 460 observations) r = 0.80, p < 0.001 Bland Altman analysis for difference between TSB and TcB MD = 12 micromol/L (95%CI 9.4 to 14.5) SD = 27.4micromol/L Diagnostic accuracy of TcB (threshold value > 205 micromol/L) for detecting TSB > 255 micromol/L	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified

		Exclusion: babies receiving phototherapy or already received exchange transfusion		Sensitivity: 13/14 (92.9%) Specificity: 373/446 (83.6$) PPV: 13/86 (15.1%) NPV: 373/374 (99.7%)	
Sanpavat S; Year: 2007 Country: Thailand 75	Study Type: Diagnostic study Evidence Level: II	Clinically healthy preterm babies with BW > 1000 grams and GA < 36 weeks with visible jaundice which necessitated TSB determination. N = 196 mean BW 1887 + 344.4 grams mean GA 33.2 + 1.7 weeks, postnatal age: 108 + 77 hours Gender: Males = 55% Ethnicity Not reported Total paired (TcB-TSB) observations = 249	TcB using Minolta JM-103 from the forehead Mean of three measurements taken for data analysis. Reference standard: Laboratory TSB levels within 1 hour of TcB measurement Percentage of TcB readings which overestimated (TcB > 10% of TSB) or underestimated (TcB < 10% of TSB)	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 249 observations) r = 0.79, p < 0.0001 Bland Altman analysis for difference between TSB and TcB MD = -5.0 micromol/L (95%CI -1.7 to -8.5) SD = 25.5 micromol/L Comparison of TcB readings with TSB levels at different postnatal ages (N = 249) *Day 1-2 (N = 67)*	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified

		Exclusion: babies receiving phototherapy or already received exchange transfusion		Overestimate = 47.8% Underestimate = 14.9% *Day 3-4 (N = 103)* Overestimate = 34.0% Underestimate = 13.6% *Day 5-7 (N = 45)* Overestimate = 20.0% Underestimate = 28.9% *> 7 day (N = 34)* Overestimate = 17.6% Underestimate = 35.3%	
Chang YH; Year: 2006 Country:	Study Type: Diagnostic study Evidence Level: II	Healthy term and near term babies born in a tertiary hospital. N = 447 mean BW 3185 ± 399.9 grams	TcB using Minolta JM-103 Three measurements made from the forehead, right and left side of the anterior chest wall, and their mean taken for data analysis.	<u>Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 447)</u> r = 0.83, p < 0.0001	No exclusion criterion Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified

China 76		mean GA 38.6 + 1.3 weeks Postnatal age: Not reported Gender: Males = 51.2% Prevalence of TSB > 255 micromol/L = 15% (67/447) Exclusion: not defined	Reference standard: Laboratory TSB levels within 1 hour of TcB measurement Diagnostic accuracy calculated for detecting TSB > 255 micromol/L	Bland Altman analysis for difference between TSB and TcB MD = -17 micromol/L (95%CI 15.3 to 20.4) SD = 27.2micromol/L Diagnostic accuracy of TcB (threshold value > 200 micromol/L) for detecting TSB > 255 micromol/L Sensitivity: 53/67 (79.1%) Specificity: 301/380 (79.2%) PPV: 53/132 (40.1%) NPV: 301/315 (95.6%)	
Rubaltelli FF; Year: 2001 Country: Europe (multi-centre	Study Type: Diagnostic study Evidence Level: 1b	Term and pre-term neonates who underwent TSB tests as part of normal care at 6 European Hospitals. N = 210 with 35 babies from each hospital BW: <2500 grams = 16.3%	TcB using BiliChek from the forehead and sternum – single measurement taken from each site. Reference standard: Laboratory TSB levels within 30 minutes of TcB measurement	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 210) *Forehead* r = 0.87, p < 0.001	Unselected population but exclusion criterion not defined Test & Reference test described adequately Test and reference test carried out within one hour

study in UK, Germany, France, Italy, Switzerland) 77		GA: >36 week = 80.2% Postnatal age: <48 hours = 16.3% Gender: Not reported Ethnicity White = 66.7% Asian = 14.8% Hispanic = 6.7% Other = 11.9% Exclusion: not defined	Blood sample also collected for TSB estimation using HPLC-B technique at the same time Diagnostic accuracy of TcB (various thresholds) estimated at various thresholds and plotted on ROC curve.	*Sternum* r = 0.85, p < 0.001 <u>Correlation of lab TSB levels with TSB levels using HPLC-B</u> <u>(Pearson correlation coefficient, N = 210)</u> r = 0.93, p < 0.001 <u>Bland Altman analysis for difference between lab TSB and TcB</u> *Forehead* MD = +2.4 micromol/L (95%CI -2.4 to +7.1) SD = 35.4 micromol/L *Sternum* MD = -14.8 micromol/L (95%CI -19.9 to +9.5) SD = 38.4 micromol/L	Blinding – yes

				Diagnostic accuracy of TcB on forehead (threshold 187 micromol/L) for detecting TSB > 222 micromol/L by HLPC-B Sensitivity: 93% Specificity: 73% Diagnostic accuracy of TcB (threshold 238 micromol/L) for detecting TSB > 290 micromol/L by HLPC-B Sensitivity: 90% Specificity: 87%	
Boo NY; Year: 2007 Country: Malaysia 78	Study Type: Diagnostic study Evidence Level: 1b	Healthy term Malaysian babies with hyperbilirubinaemia N = 345 mean BW: 3056 $\pm$ 487 grams, median GA 38 weeks postnatal age: range 9 – 388 Gender: Males = 60%	TcB using BiliChek from the forehead and midpoint of sternum – number of measurements from each site not specified Reference standard: Laboratory TSB levels within 30 minutes of TcB measurement Diagnostic accuracy of TcB	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 345) *Forehead* All babies r = 0.80, p < 0.0001 Malays: r = 0.79, p < 0.0001	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – yes Data not given for the mean difference and SD from Bland Altman analysis for TSB – TcB

		Ethnicity Malays = 63.8% Chinese = 30.7% Indians = 5.5%, Prevalence of TSB > 300 micromol/L = 27.5% (95/345) Exclusion: infants who had received phototherapy or exchange transfusion, congenital anomalies, severely ill, foreigners, those with conjugated hyperbilirubinaemia.	(various thresholds) calculated for detecting TSB > 250, > 280, and > 300 micromol/L	Chinese: r = 0.84, p < 0.0001 Indians: r = 0.83, p < 0.0001 *Sternum* All babies r = 0.86, p < 0.0001 Malays: r = 0.86, p < 0.0001 Chinese: r = 0.86, p < 0.0001 Indians: r = 0.94, p < 0.0001 Correlation of TcB levels with lab TSB levels depending on the time of measurement (Pearson correlation coefficient, 79% of infants with TSB > 300 had measurement at > 80 hours) *At ≤ 80 hours* r = 0.85, p < 0.001 *At > 80 hours* r = 0.71, p < 0.001	

				<u>Diagnostic accuracy of TcB for detecting TSB > 300 micromol/L</u> *Forehead (threshold 250 micromol/L)* Sensitivity: 100% Specificity: 39.2% *Forehead (threshold 260 micromol/L)* Sensitivity: 75.8% Specificity: 84.8% *Sternum (threshold 200 micromol/L)* Sensitivity: 100% Specificity: 33.6% *Sternum (threshold 280 micromol/L)* Sensitivity: 92.6% Specificity: 84%	
Ebbesen F;	Study Type: Diagnostic study	All newborns more than 24 hours old who for clinical reasons had their plasma bilirubin determination during	TcB measurement using BiliChek from forehead, sternum, knee and the foot – mean of 5	<u>Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N</u>	Unselected population Test & Reference test

Year: 2002 Country: Denmark 47	Evidence Level: III	the day, except at weekends. Group 1: Both preterm infants < 35 weeks and sick term and near-term infants in the NICU N = 261 mean BW 2521 grams - range 680 to 4645 grams, mean GA 34.6 weeks - range 25 to 43 weeks postnatal age at 1st TcB: 98.4 - range 48 – 840 Gender: Males = 60.1% Ethnicity: Non-northern European descent = 9% Group 2: Healthy term and near-term infants with GA > 35 weeks in the maternity ward N = 227 mean BW 3362 grams - ange 2170 to 5000 grams mean GA 38.6 weeks - range 35 to 43	measurements from each site taken for data analysis. Reference standard: Laboratory TSB levels taken concurrently with TcB measurement Diagnostic accuracy of TcB from forehead (threshold > 0.70 of phototherapy limit) estimated for predicting TSB levels > phototherapy limits as suggested by the Danish Pediatric Society	= 210) **Group 1:** *Forehead* r = 0.88, p > 0.05 *Sternum* r = 0.82, p < 0.001 *Knee* r = 0.77, p < 0.001 *Foot* r = 0.51, p < 0.001 On comparing correlation coefficient of forehead with that for sternum, knee and foot, p < 0.001 for each of the comparison **Group 2:** *Forehead* r = 0.87, p > 0.05 *Sternum* r = 0.90, p < 0.05	described adequately Test and reference test carried out within one hour Blinding – not specified Data not given for the mean difference and SD from Bland Altman analysis for TSB - TcB

		weeks postnatal age at 1st TcB: 74.4 - range 48 – 360 Gender: Males = 55.5% Ethnicity: Non-northern European descent = 7% Exclusion: babies already receiving phototherapy or who received phototherapy 6 hours before TSB measurement, with skin infection, purpura, bruising		*Knee* r = 0.83, $p < 0.05$ *Foot* r = 0.67, $p < 0.001$ On comparing correlation coefficient of forehead with that for sternum, knee and foot, $p < 0.05$ for comparison with knee and foot only Diagnostic accuracy of TcB (threshold value > 0.70 times the phototherapy limit) from forehead in detecting TSB > phototherapy limit **Group 1 (N = 504 observations):** Sensitivity: 108/109 (99.1%) Specificity: 177/395 (44.8%) PPV: 108/326 (33.1%) NPV: 177/178 (99.4%) **Group 2 (N = 317 observations):** Sensitivity: 3/3 (100%) Specificity: 254/314 (80.9%)	

				PPV: 3/63 (4.8%) NPV: 254/254 (100%)	
Samanta S; Year: 2004 Country: UK 48	Study Type: Diagnostic study Evidence Level: II	All babies > 33 weeks in the postnatal ward of a regional teaching hospital who were due to have blood taken for TSB estimation N = 300 median BW 3295 grams – range 1972 to 4720 median GA 39 weeks – range 33 to 42 median postnatal age: 72 hours – range 24 to 264 Gender: Males = 50% Prevalence of TSB > 250 micromol/L = 55/300 (18.3%) Exclusion: babies who had previously received phototherapy	TcB using BiliChek (site not specified) – single measurement taken. Reference standard: Laboratory TSB levels taken concurrently with TcB measurement Diagnostic accuracy of TcB (various thresholds) estimated by plotting ROC curve.	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 300) r = 0.77, p < 0.0001 Bland Altman analysis for difference between lab TSB and TcB MD = -10.6 micromol/L (95%CI -80.0 to +60.0) SD = Not reported Diagnostic accuracy of TcB (threshold value > 195 micromol/L) for detecting TSB > 250 micromol/L Sensitivity: 50/55 (90.9%) Specificity: 162/245 (66.1%) PPV: 50/133 (37.6%)	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – not specified

				NPV: 162/167 (97%)	
De Luca D; Year: 2007 Country: Italy 79	Study Type: Diagnostic study Evidence Level: 1b	Preterm babies with GA between 30-36 weeks admitted in the neonatal sub-intensive unit of tertiary hospital. N = 340 mean BW 2145 ± 518 grams mean GA 33.5 ± 1.9 weeks mean postnatal age: Not reported Gender: Males = 48.2% Exclusion: babies receiving phototherapy or exchange transfusion, asphyxia (Apgar score < 7 at 5 min), Rh or major ABO incompatibility, conjugated bilirubin > 17.1 micromol/L, congenital malformation, liver disease.	TcB using BiliChek from the forehead – mean of 5 measurements taken for data analysis. Reference standard: Laboratory TSB levels within 10 minutes of TcB measurement Diagnostic accuracy of TcB estimated by plotting ROC curve and results given for best thresholds	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient, N = 210) r = 0.79, p < 0.001 Bland Altman analysis for difference between mean lab TSB and mean TcB % with difference > 8.55 micromol/L = 61.5% (209/340) MD = -18.8 micromol/L SD = 34.2 micromol/L Diagnostic accuracy of TcB (threshold value > 111 micromol/L) for detecting TSB > 171 micromol/L Sensitivity: 100% Specificity: 40% Diagnostic accuracy of TcB (threshold value > 171 micromol/L) for detecting	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – yes but only investigator Data not extractable for calculating values of TP, FP, TN & FN for detecting hyperbilirubinaemia

				TSB > 205 micromol/L Sensitivity: 100% Specificity: 72%	
Karon B; Year: 2008 Country: USA [81]	Study Type: Diagnostic study Evidence Level: III	Babies in a well-infant nursery were eligible if a serum bilirubin was ordered to assess risk of hyperbilirubinaemia. N = 177 Mean BW: Not reported Median GA: 39.9 weeks (32.7 to 41.4) Gender: Not reported Ethnicity: White = 82.5% Black = 1.7% Hispanic = 5.1% Asian = 10.7% Exclusion: None	Test: TcB reading from the forehead using BiliChek – mean of 5 measurements taken for data analysis Reference standard: 1.Laboratory TSB diazo method measured on blood collected within 30 minutes as TcB. 2. Laboratory TSB vitros method measured on blood collected within 30 minutes as TcB.	Correlation of TcB levels with TSB levels (Pearson correlation coefficient, N = 177) *Forehead* Diazo: $r^2 = 0.65$ Vitros: $r^2 = 0.66$ Diagnostic accuracy of TcB (threshold value >75 centile on Bhutani nomogram **Diazo:** Sensitivity: 56/57 (98.2%) Specificity: 48/120 (40%) PPV: 56/127 (43.7%) NPV: 48/49 (98%)	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – No

				Vitros: Sensitivity: 63/67 (94%) Specificity: 35/64 (54.7%) PPV: 63/92 (68.5%) NPV: 35/39 (89.7%)	
Slusher TM; Year: 2004 Country: Nigeria 80	Study Type: Diagnostic study Evidence Level: II	Clinically jaundiced term and preterm babies with age < 14 days admitted in two hospitals N = 127 mean BW: 2.72 ± 0.62 kg mean GA: Not reported Gender: Males = 60%, Pigmentation – dark pigmentation 10% medium pigmentation = 36% light pigmentation = 54%	TcB using BiliChek from the forehead and before starting phototherapy Skin pigmentation determined through visual observation Reference standard: Laboratory TSB levels obtained simultaneously with TcB measurement	Correlation of TcB levels with lab TSB levels (Pearson correlation coefficient) *Both hospital together* r = 0.92 *Babies with TSB ≥ 205 micromol/L* r = 0.84 *Babies with TSB < 205 micromol/L* r = 0.67 *Based on pigmentation* Light: r = 0.91 Medium: r = 0.94	Unselected population Test & Reference test described adequately Test and reference test carried out within one hour Blinding – yes but only investigator Data not extractable for calculating values of TP, FP, TN & FN for detecting hyperbil

		Hospital A: 500-bed tertiary teaching hospital (N = 98) Hospital B: 168-bed hospital located in a rural village (N = 29) Exclusion: not defined		Dark: r = 0.87 Bland Altman analysis for difference between mean TcB and mean lab TSB values *Both hospitals together* MD = 8.5 micromol/L (95%CI -3.4 to 21.4 micromol/L SD = 129.2 micromol/L *Babies with TSB ≥ 205 micromol/L* MD = --21.4 micromol/L (95%CI -40.8 to 0.0 micromol/L) SD = 146.2 micromol/L *Babies with TSB < 205 micromol/L* MD = 35.7 micromol/L (95%CI 25.5 to 45.9 micromol/L) SD = 129.2 micromol/L *Based on pigmentation* **Light:** MD = 18.4 micromol/L, SD = 91.8 micromol/L	

				Medium: MD = 13.6 micromol/L, SD = 132.6 micromol/L **Dark:** MD = -3.4 micromol/L, SD = 197.2 micromol/L	

What should be included in a formal assessment of a baby with neonatal hyperbilirubinaemia?

Evidence Table – Assessment Tests

TSB < 255micromol/L

Bibliographic details	**Study type & Evidence level**	**Patient characteristics**	**Results**	**Reviewers Comments**
Author: Werblinska B Year: 1981 Country: Nigeria Ref ID: [92]	Study type: Case-control study Evidence level: 2^-	Diagnosis: Jaundice Criteria: TSB $\geq$ 171 micromol/L Setting: Hospital Sample Size: 40 GA: Not reported Mean BW: Not reported. Gender M/F: 19/21 Ethnicity: Not reported Exclusion: None	Mean bilirubin levels TSB: 253 micromol/L ABO incompatibility: 8/40 (20%) Rh incompatibility: 3/40 (7.5%) G6PD deficiency: 13/40 (32.5%) P value < 0.001 Infection: 34/40 (85%) P value < 0.001	Small study, Incomplete data from three subject so not included in analysis All 38controls (14 M & 24 F) were delivered by Caesarean Section due to maternal complication

			Idiopathic: 3/40 (7.5)	
Author: Azubuike J Year: 1979 Country: Nigeria Ref ID: [91]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB ≥ 170 micromol/L Setting: Hospital Sample Size: 424 GA: Not reported Mean BW: Not reported Gender M/F: Not reported Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Days 0 – 10 Exclusion: None	Mean bilirubin levels TSB: Not reported ABO incompatibility: 178/424 (41.2%) Rh incompatibility:2/424 (0.5%) G6PD deficiency: 229/424 (54%) Infection: 60/424 (14.1%) Idiopathic: 39/424 (9.2%)	
Author: Guaran R Year: 1992 Country: Australia Ref ID: [98]	Study type: Retrospective chart review Evidence level: 3	Diagnosis: Jaundice Criteria: TSB ≥ 154 micromol/L Setting: Hospital Sample Size: 10944 GA: Not reported. Mean BW: Not reported	Mean bilirubin levels TSB: Not reported ABO incompatibility: 601/6129 (9.8%) Rh incompatibility:193/6129 (3.1%)	4815 cases had no investigations Prematurity is reported to be the most common cause 2,226/61290 (36.3%)

		Gender M/F: Not reported Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None (4,815 Not investigated)	G6PD deficiency: 51/6129 (0.8%) Infection: 198/6129 (3.2%) **Exchange Transfusion (N = 248)** ABO incompatibility: 58/248 (23.4%) Rh incompatibility: 108/248 (43.5%) G6PD deficiency: 2/248 (0.8%) Infection: 2/248 (0.8%)	
Author: Sodeinde O Year: 1995 Country: Nigeria	Study type: Case control study Evidence level: 2^-	Diagnosis: Jaundice Criteria: TSB $\geq$ 205 micromol/L Setting: Hospital Sample Size: 327 Mean GA: Not reported. 87 (26.5%) were premature <	Mean bilirubin levels TSB: Not reported ABO incompatibility: 40/150 (26.7%) Rh incompatibility: 3/150 (2.0%)	Not all subjects tested for ABO incompatibility or infection

Ref ID: [93]		37 weeks Mean BW: 2.73 $\pm$ 0.74 kgs Gender M/F: Not reported Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	G6PD deficiency: 109/327 (33.3%) (P value < 0.0087) Infection: 38/217 (17.5%) Idiopathic: Not reported	
Author: Yeung C Year: 1973 Country: China Ref ID: [99]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB $\geq$ 171 micromol/L Setting: Hospital Sample Size: 1811 Mean GA: Not reported Mean BW: Not reported. 65 (3.6%) were premature <38 weeks Gender M/F: 1054/755 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Day 0 - 10	Mean bilirubin levels TSB: Not reported ABO incompatibility: 414/1811(22.8%) Rh incompatibility: Not reported G6PD deficiency: 241/1811 (13.3) Infection: Not reported Idiopathic: Not reported	

		Exclusion: None	**Exchange transfusion (N = 581)** ABO incompatibility: 157/581 (27.0%) G6PD deficiency: 13/581 (22.4%) Infection: Not reported Idiopathic: Not reported **Kernicterus (N = 156)** ABO incompatibility: 51/156 (32.7%) G6PD deficiency: 58/156 (37.2%) Infection: Not reported Idiopathic: Not reported	
Author: Bhandari A	Study type: Case control study	Diagnosis: Jaundice Criteria: TSB $\geq$ 171 micromol/L	Mean bilirubin levels TSB: Not reported	

Year: 1982 Country: India Ref ID: [94]	Evidence level: 2⁻	Setting: Hospital Sample Size: 100 Mean GA: Not reported Mean BW: Not reported Gender M/F: 58/42 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Day 0 - 5 Exclusion: None	ABO incompatibility: 10/100 (10.0%) Rh incompatibility: 20/100 (20.0%) G6PD deficiency: 4/100 (4.0%) Infection: Not reported Idiopathic: Not reported	
Author: Bajpai P Year: 1971 Country: India Ref ID: [95]	Study type: Case control study Evidence level: 2⁻	Diagnosis: Jaundice Criteria: TSB ≥205 micromol/L Setting: Hospital Sample Size: 50 Mean GA: Not reported Mean BW: Not reported Gender M/F: Not reported Ethnicity: Not reported Breastfeeding: Not reported	Mean bilirubin levels TSB: Not reported ABO incompatibility: 8/50 (16.0%) Rh incompatibility: 1/50 (2.0%) G6PD deficiency: 2/50 (4.0%) Infection: 7/50 (14.0%)	

		Onset of Jaundice: Not reported Exclusion: None	Idiopathic: 19/50 (38%)	
Author: Arif K Year: 1999 Country: Pakistan Ref ID: [97]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice *Criteria:* None Setting: Hospital Sample Size: 869 Mean GA: 37.2 + 2.8 weeks Mean BW: 27574 + 735 grams Gender M/F: 484/385 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: 221 + 42 micromol/L ABO incompatibility: 56/869 (6.4%) Rh incompatibility: 57/869 (6.6%) G6PD deficiency: 20/869 (2.3%) Infection: 165/869 (19.0%) **Exchange transfusion** ABO incompatibility: 4/27 (14.8%) Rh incompatibility: 7/27 (25.9%) G6PD deficiency: 2/27 (7.4%)	Retrospective study

			Infection: 6/27 (22.2%)	
Author: Singhal P Year: 1992 Country: India Ref ID: [96]	Study type: Case series Evidence level: 3	Diagnosis: Hyperbilirubinaemia Criteria: TsB >205 micromol/L Setting: Hospital Sample Size: 454 Mean GA: Not reported Mean BW: Not reported Gender M/F: 258/196 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: Not reported ABO incompatibility: 65/454 (14.3%) Rh incompatibility: 37/454 (8.1%) G6PD deficiency: 23/454 (5.1%) **Exchange transfusion** ABO incompatibility: 18/66 (27.4%) Rh incompatibility: 21/66 (31.8%) G6PD deficiency: 11/66 (16.7%)	From 7680 live births 454 (5.9%) has TsB >205 micromol/L

Evidence Table – Assessment Tests

TSB 255 – 399 micromol/L

Bibliographic details	**Study type & Evidence level**	**Patient characteristics**	**Results**	**Reviewers Comments**
Author: Biddulph J Year: 1974 Country: Papua New Guinea Ref ID: [104]	Study type: Consecutive case-series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB $\geq$ 256 micromol/L Setting: *Hospital* Sample Size: 50 Mean GA: Not reported Mean BW: Not reported Gender M/F:29/21 Ethnicity: Not reported Breastfeeding: 50 (100%) Onset of Jaundice: Day 1 - 17 Duration of jaundice: 26 (52%) < 1 week Exclusion: None	Mean bilirubin levels TSB: Not reported Incidence of ABO incompatibility: 12/50 (24%) Rh incompatibility: Not reported Incidence of G6PD deficiency: 11/50 (22%) Incidence of sepsis: 8/50 (16%) Idiopathic: 19/50 (38%) **Exchange transfusion (N = 11)** Incidence of ABO incompatibility: 4/11 (36.4%)	Small study

			Incidence of G6PD deficiency: 3/11 (27.3%) Incidence of sepsis: 2/11 (18.2%) Idiopathic: 2/11 (18.2%)	
Author: Seidman D Year: 1995 Country: Israel Ref ID: [102]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB $\geq$ 308 micromol/L Setting: Hospital Sample Size: 21 Mean GA: 39.3 $\pm$ 1.2 weeks Mean BW: 3206 $\pm$ 340 gms Gender M/F: 15/6 Ethnicity: 9 Jew Askenazi, 3 Kurdish, 2 Iraqi and others. Breastfeeding: 20/21 Onset of Jaundice: Day 0 - 10 Exclusion: None	Mean bilirubin levels TSB: 335 $\pm$ 43 micromol/L ABO incompatibility: 0/21 (0%) Rh incompatibility: 0/21 (0%) G6PD deficiency: 2/21 (9.5%) Infection: 0/21 (0%) Idiopathic: Not reported	Small study Subjects had received phototherapy and were discharged with TSB > 171 micromol/L so could qualify as persistent jaundice
Author: Effiong C	Study type:	Diagnosis: Jaundice	Mean bilirubin levels	

Year: 1975 Country: Nigeria Ref ID: [103]	Case series Evidence level: 3	Criteria: TSB ≥ 256 micromol/L Setting: Hospital Sample Size: 125 Mean GA: Not reported Mean BW: Not reported Gender M/F: 70/55 Ethnicity: Not reported Breastfeeding: Onset of Jaundice: Days 0 – 7 Duration of jaundice: Exclusion: None	TSB: Not reported ABO incompatibility: 26/125 (20.6%) Rh incompatibility: 2/125 (1.6%) G6PD deficiency: 49/125 (39.2%) Infection: 1/125 (0.8%) Idiopathic: 35/125 (28%) **Exchange Transfusion (N = 53)** ABO incompatibility: 15/53 (20.6%) Rh incompatibility:1/53 (1.9%) G6PD deficiency: 21/53 (39.6%)	

			Infection: 0/53 (0%) Idiopathic: 11/53 (20.7%)	
Author: Ho K Year: 1991 Country: Singapore Ref ID: [105]	Study type: Retrospective chart review Evidence level: 3	Diagnosis: Jaundice Criteria: TSB >256 micromol/L Setting: Hospital Sample Size: 270 Mean GA: Not reported Mean BW: Not reported Gender M/F: Not reported Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: Not reported ABO incompatibility: 73/270 (27.0%) Rh incompatibility:1/270 (0.4%) G6PD deficiency: 18/270 (6.7%) Infection: Not reported Idiopathic: Not reported **Exchange Transfusion (N = 46)** ABO incompatibility: 17/46 (37.0%) Rh incompatibility: 1/46 (2.2%)	Authors report a drop in number of G-6-PD cases requiring exchange transfusion on new guidelines that specified that G-G-PD be screened for at birth and deficient babies be kept in hospital for a minimum of 2 weeks

			G6PD deficiency: 2/46 (4.3%) Infection: 8/46 (17.4%) Idiopathic: 6/46(13.0%)	
Author: Ahmed H Year: 1995 Country: Nigeria Ref ID: [101]	Study type: Case control study Evidence level: 2^-	Diagnosis: Jaundice Criteria: TSB $\geq$171 micromol/L Setting: Hospital Sample Size: 102 Mean GA: Not reported Mean BW: Not reported Gender M/F: 65/37 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: 312 micromol/L ABO incompatibility: 24/102 (23.5%) Rh incompatibility: 0/102 (0%) G6PD deficiency: 41/102 (41.2%) Infection: 57/102 (55.9%) Idiopathic: Not reported	Incidence of infection higher in babies re-admitted from home
Author: Mamtani M	Study type: Cohort	Diagnosis: Jaundice Criteria: TSB $\geq$ 256 micromol/L if the age of the baby is	Mean bilirubin levels TSB: 376 $\pm$ 85 micromol/L	

Year: 2007 Country: India Ref ID: [100]	Evidence level: 2⁻	≤15 days Setting: Tertiary care Hospital Sample Size: 92 Mean GA: Not reported. 17 were Preterm Mean BW: Not reported: 35 were small for GA Gender M/F: 57/35 Ethnicity: Not reported Breastfeeding: 58 (63%) Onset of Jaundice: Day 0 - 15 Exclusion: None	ABO incompatibility: 14/92 (15.3%) Rh incompatibility:10/92 (10.9%) G6PD deficiency: 4/92 (4.3%) Infection: 18/92 (19.6%) Idiopathic: Not reported	
Author: Tay J Year: 1984 Country: Singapore Ref ID: [106]	Study type: Cohort Evidence level: 2⁻	Diagnosis: Jaundice Criteria: TSB ≥ 222 micromol/L Setting: Hospital Sample Size: 181 Mean GA: Not reported. 15 were preterm Mean BW: Not reported. 25 were less than 2500gms Gender M/F: Not reported Ethnicity: Not reported	Mean bilirubin levels TSB: 330 ± 51micromol/L ABO incompatibility: 42/181 (23.2%) Rh incompatibility: 1/181 (0.6%) G6PD deficiency: 4/181 (2.2%)	Those with G-6-PD deficiency kept in hospital for 21 days

		Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Infection: Not reported Idiopathic: Not reported **Kernicterus (N = 8)** ABO incompatibility: 4/8 (50.0%) Rh incompatibility: 1/8 (12,5) G6PD deficiency: 0/8 (0%) Infection: Not reported Idiopathic: Not reported	
Author: Chen W Year: 1981 Country: Taiwan	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB $\geq$ 25 micromol/L Setting: Hospital Sample Size: 196 Mean GA: Not reported.	Mean bilirubin levels TSB: 327 $\pm$ 72 micromol/L ABO incompatibility: 61/196(31.1%) Rh incompatibility:1/196 (0.5%)	

Ref ID: [107]		Mean BW: Not reported: 25 had low birth weight Gender M/F: Not reported Ethnicity: Chinese Breastfeeding: Not reported Onset of Jaundice: Day 0 - 15 Exclusion: None	G6PD deficiency: 43/196(21.9%) Infection: 10/196 (5.1%) Idiopathic: 53/196 (17.0%)	
Author: Atay E Year: 2006 Country: Turkey Ref ID: [108]	Study type: Case series Evidence level: 3	Diagnosis: Indirect hyperbilirubinaemia Criteria: None Setting: Hospital Sample Size: 624 Mean GA: Not reported. Mean BW: 3082 $\pm$ 530 grams Gender M/F: 330/294 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: 6.57 $\pm$ 4.04 days Exclusion: None	Mean bilirubin levels TSB: 359 + 70 micromol/L ABO incompatibility: 171/624 (27.4%) Rh incompatibility:52/624 (8.3%) G6PD deficiency: 24/624 (3.8%) Infection: 36/624 (5.8%) Idiopathic: 312/624 (50.0%)	

			Kernicterus ABO incompatibility: 2/6 (33.3%) Rh incompatibility: 1/6 (16.6%) G6PD deficiency: 1/6 (16.6%) Infection: 0/6 (0%) Idiopathic: 0/6 (0%)	
Author: Al-Omran A Year: 1999 Country: Saudi Arabia Ref ID: [111]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TsB >256 micromol/L Setting: Hospital Sample Size: 211 Mean GA: Not reported. Mean BW: Not reported Gender M/F: Not reported Ethnicity: Saudis (97%) Breastfeeding: Not reported	Mean bilirubin levels TSB: Not reported ABO incompatibility: 21/211 (9.9%) Rh incompatibility: 2/211 (0.9%) G6PD deficiency: 64/211 (30.3%) Infection: 4/211 (1.9%)	

		Onset of Jaundice: Not reported Exclusion: None	Idiopathic: 108/211 (51.2%)	
Author: Dawodu A Year: 1998 Country: UAE Ref ID: [110]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: Cockington Setting: Hospital Sample Size: 85 Mean GA: Not reported. Mean BW: Not reported Gender M/F: Not reported Ethnicity: 57 (67%) Arab 26 (30%) Asian Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: Not reported ABO incompatibility: 22/85 (25.9%) Rh incompatibility: 1/85 (1.2%) G6PD deficiency: 8/85 (9.4%)	
Author: Koosha A Year: 2007	Study type: Case series Evidence level: 3	Diagnosis: Hyperbilirubinaemia Criteria: ICD Setting: Hospital	Mean bilirubin levels TSB: Not reported ABO incompatibility: 14/376 (3.7%)	

Country: Iran Ref ID: [109]		Sample Size: 376 Mean GA: Not reported. Mean BW: Not reported Gender M/F: 159/217 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Rh incompatibility: 8/376 (2.1%) G6PD deficiency: 8/376 (2.1%) Infection: 59/376 (15.7%)	

Evidence Table – Assessment Tests

TSB >400 micromol/L / or Exchange Transfusion

Bibliographic details	**Study type & Evidence level**	**Patient characteristics**	**Results**	**Reviewers Comments**
Author: Nkrumah F Year: 1973 Country: Ghana Ref ID: [113]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB $\geq$ 342 micromol/L Setting: Hospital / Paediatric outpatient Sample Size: 35 Mean GA: Not reported Mean BW: Not reported Gender M/F: 26/9 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Day 0 - 8 Duration of jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: 551 $\pm$ 182 micromol/L Incidence of ABO incompatibility: 14/35 (40%) Rh incompatibility: 1/35 (2.9%) Incidence of G6PD deficiency: 13/35 (37.1%) Incidence of sepsis: Not reported Idiopathic: 10/35 (28.6%) **Kernicterus** Incidence of ABO incompatibility: 6/17 (35.3%)	Small study

			Rh incompatibility: 1/17 (5.9%) Incidence of G6PD deficiency: 8/17 (47.0%) Incidence of sepsis: Not reported Idiopathic: 3/17 (17.6%)	
Author: Manning D Year: 2007 Country: UK & Republic of Ireland Ref ID: [19]	Study type: Survey Evidence level: 3	Diagnosis: Jaundice Criteria: TSB ≥ 513 micromol/L Setting: Not reported Sample Size: 106 Mean GA: 38.2 ± 1.7 weeks Mean BW: 3170 ± 480 gms Gender M/F: 64/42 Ethnicity: White 52 (48.1%), Asian 18 (16.7%), Black 11 (10.1%), Mixed 11 (10.1%) Breastfeeding: 87 (80.5%) Onset of Jaundice: Not reported	Mean bilirubin levels TSB: 581 micromol/L (510-802) ABO incompatibility: 33/106 (31.1%) Rh incompatibility:6/106 (5.7%) G6PD deficiency: 5/106 (4.7%) Infection: 4/106 (3.8%) Idiopathic: 29/106 (27.3%)	

		Exclusion: None	**Kernicterus Cases (N = 14)** ABO incompatibility: 3/14 (21.4%) Rh incompatibility: 1/14 (7.1%) G6PD deficiency: 3/14 (21.4%) Infection: 2/14 (14.3%) Idiopathic: 1/14 (7.1%)	
Author: Katar S Year: 2008 Country: Turkey Ref ID: [115]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB > 342 micromol/L at 24-48 hours or $\geq$ 427 micromol/L) at >48 hours after birth Setting: Neonatal clinic Sample Size: 21 Mean GA: Not reported. All were term babies Mean BW: 2943 $\pm$ 533 gms Gender M/F: 15/6 Ethnicity: Not reported	Mean bilirubin levels TSB: 598 $\pm$ 185 micromol/L ABO incompatibility: 4/21 (19.5) Rh incompatibility: 4/21 (19.5%) G6PD deficiency: 4/21 (19.5%) Infection: Not reported	Small study

		Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Idiopathic: 10/21 (47.5%)	
Author: Dawodu A Year: 1984 Country: Nigeria Ref ID: [114]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB > 205 micromol/L Setting: Hospital Sample Size: 109 Mean GA: Not reported Mean BW: Not reported Gender M/F: 77/32 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: 616 + 197 micromol/L : ABO incompatibility: 15/109 (13.8%) Rh incompatibility: Not reported G6PD deficiency: 67/109 (61.5%) Infection: 24/109 (22.0%) Idiopathic: 13/109 (11.9%)	Only subjects with indication for infection were tested
Author: Tiker F Year: 2006	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB > 428 micromol/L Setting: Neonatal Intensive Care Unit	Mean bilirubin levels TSB: 515 + 97 micromol/L ABO incompatibility: 7/93 (7.5%)	Not all babies tested for G-6-PD levels

Country: Turkey Ref ID: [116]		Sample Size: 93 Mean GA: 38.57 weeks Mean BW: Not reported Gender M/F: 51/42 Ethnicity: Not reported Breastfeeding: 93/93 Onset of Jaundice: Day 0 - 30 Exclusion: None	Rh incompatibility: 7/93 (7.5%) G6PD deficiency: 2/39 (5.1%) Infection: 7/93 (7.5%) Idiopathic: 61/93 (615.6%) **Kernicterus (N = 6)** ABO incompatibility: 1/6 (16.7%) Rh incompatibility: 0/6 (0%) G6PD deficiency: 1/6 (16.7%) Infection: 3/6 (50.0%) Idiopathic: 1/6 (16.7%)	

Author: Sgro M Year: 2006 Country: Canada Ref ID: [119]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB > 427 micromol/L) Setting: Hospital Sample Size: 258 Mean GA: 38.5 + 1.4 weeks Mean BW: 3360 + 489 gms Gender M/F: 162/96 Ethnicity: White 55.4%, Asian 24.3%, Aboriginal 7.6%, black 5.2%, Middle Eastern 4.0%, Latin American 2.8% Breastfeeding: Not reported Onset of Jaundice: Day 0 - 60 Exclusion: None	Mean bilirubin levels TSB: 464 + 75 micromol/L ABO incompatibility: 49/258 (18.9%) Rh incompatibility: Not reported Incidence of G6PD deficiency: 20/258 (7.7%) Infection: 3/258 (1.2%) Idiopathic: Unclear	
Author: Bjerre J Year: 2008 Country: Denmark Ref ID: [118]	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: TSB > 445 micromol/L Setting: Hospital Sample Size: 113 GA (range): 35 – 42 weeks BW (range): 2380 - 4870gms	Mean bilirubin levels TSB: Not reported ABO incompatibility: 52/113 (46.0%) Rh incompatibility: 2/113 (0.2%)	

		Gender M/F: 69/44 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Day 0 - 28 Exclusion: None	Incidence of G6PD deficiency: 1/113 (0.9%) Infection: Not reported Idiopathic: Unclear	
Author: Necheles T Year: 1976 Countries: United States & Greece Ref ID: [117]	Study type: *Case series* Evidence level: 3	Diagnosis: Severe jaundice requiring exchange transfusions Criteria: Not reported Setting: Hospital Sample Size: 75 GA: Not reported BW: Not reported Gender M/F: 69/44 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: Not reported ABO incompatibility: 29/75 (38.7%) Rh incompatibility: 6/75 (8.0%) Incidence of G6PD deficiency: 14/75 (18.7%) **Kernicterus** ABO incompatibility: 1/6 (16.7%) Rh incompatibility: 0/6 (0%) Incidence of G6PD deficiency: 3/6 (50.0%)	66 babies were in Greece and 9 were in the USA

Author: Narang A Year: 1997 Country: India Ref ID: [112]	Study type: Case series Evidence level: 3	Diagnosis: Hyperbilirubinaemia Criteria: Exchange transfusion Setting: Hospital Sample Size: 141 Mean GA: Not reported. Mean BW: Not reported Gender M/F: Not reported Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: Not reported ABO incompatibility: 8/141 (5.7%) Rh incompatibility: 13/141 (9.2%) G6PD deficiency: 24/141 (17.2%) Infection: 34/141 (24.1%) Idiopathic: 50/141 (35.4%)	Demographic data reported for all babies who received PT/ET (Cockington charts) and data Not reported for those with serum bilirubin > 256 micromol/L

Evidence Table – Assessment Tests

Kernicterus

Author: Maisels J Year: 1995 Country: USA Ref ID: [121]	Study type: Case series Evidence level: 3	Diagnosis: Kernicterus Criteria: Not reported Setting: Not reported Sample Size: 14 GA (range): 37 – 42 weeks BW (range): Not reported) Gender M/F: Not reported Ethnicity: Not reported Breastfeeding: All Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels TSB: (Not reported) ABO incompatibility: 1/14 (7.1%) Rh incompatibility: 0/14 (0 %) Incidence of G6PD deficiency: 3/14 (21.4%) Infection: 2/14 (14.3%) Idiopathic: 6/14 (42.8%)	
Author: Bhutani V Year: 2006 Country: USA	Study type: Case series Evidence level: 3	Diagnosis: Kernicterus Criteria: Not reported Setting: Hospital Sample Size: 125 GA (range): 35 – 42 weeks	Mean bilirubin levels TSB: Not reported ABO incompatibility: Not reported Rh incompatibility: Not reported	Demographc data reported for all cases on Kernicterus Register not just the sample used here

Ref ID: [22]		BW (range): 2015 – 4730 gms Gender M/F: Not reported Ethnicity: White (58.4%), Black (26.4%), Hispanic (8.8%) and Asian (6.4%) Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Incidence of G6PD deficiency: 26/125 (20.8%) Infection: Not reported Idiopathic: 44/125 (35.2%)	
Author: Ogunlesi T Year: 2007 Country: Nigeria Ref ID: [120]	Study type: Case series Evidence level: 3	Diagnosis: Bilirubin Encephalopathy Criteria: severe jaundice and tone abnormalities, abnormal cry and abnormal movements Setting: Hospital Sample Size: 115 GA: 97 (84,3%) were term BW:> 77 (69.9%) >500 grams Gender M/F: 88/27 Ethnicity: Not reported Breastfeeding: Not reported Onset of Jaundice: Not reported Exclusion: None	Mean bilirubin levels (unconjugated) TSB: 348 $\pm$ 113 micromol/L ABO incompatibility: 22/115 (19.2%) Rh incompatibility: 7/115 (6.1%) Incidence of G6PD deficiency: 40/115 (34.8%) Infection: 12/115 (10.4%)	Also 2 had mixed ABO/Rh incompatibilities 4 had mixed ABO incompatibility and septicaemia

Evidence Table – Additional Tests

Author: Hulzebos C Year: 2008 Country: USA Ref ID: [82]	Study type: Systematic review Evidence level: 1^{++}	Inclusion criteria Studies of Premature babies with hyperbilirubinaemia that used the Bilirubin/Albumin ratio to predict BIND	6 studies included. Higher B/A ratio was associated with abnormal ABR in 2 studies, lower IQ at 6 years in one study and with Kernicterus in one study One study found no difference One study found that binding capacities (expressed a B/A molar ratio) were lower in babies with kernicterus	
Author: Malik G Year: 1986	Study type: Case-series Evidence level: 3	Diagnosis: Jaundice Criteria: Not reported Exclusion: Respiratory distress, Sepsis,	Mean TsB levels 227 $\pm$ 80 micromol/L Mean free bilirubin 8.7 $\pm$ 5.6 nmol/l	

Country: India Ref ID: [83]		Hypothermia, Hypoglycaemia, Postasphysial seizure, bleeding diathesis Setting: Special baby care unit Sample Size: 53 Gender M/F: Not reported Mean GA: 37.9 + 2.2 weeks Mean BW: 2780 + 620 grams Ethnicity: Not reported	Mean Albumin levels 3.6. + 0. g/dl Mean Bilirubin/Albumin ratio 3.7 Mean Molar B/A ratio 0.41 correlation between free bilirubin and B-A ratio 0.74 (p<0.001)	
Author: Chan G Year: 1980 Country: Canada	Study type: Case series Evidence level: 3	Diagnosis: Jaundice Criteria: Jaundice Exclusion: Not reported	Mean TsB levels Not reported Mean free bilirubin Not reported Mean Albumin levels Not reported	

Ref ID: [84]		Setting: Neonatal Intensive Care Unit Sample Size: 46 (55 samples used) Gender M/F: Not reported Mean GA: 36 + 4 weeks Mean BW: 2453 + 813 grams Ethnicity: Not reported	Mean B/A ratio Not reported correlation between free bilirubin and Bilirubin/Albumin molar ratio r = 0.75, p < 0.001	
Author: De Carvalho W Year: 1992 Country: Brazil Ref ID: [85]	Study type: Case series Evidence level: 3	Diagnosis: Non-haemolytic jaundice Criteria: Mothers who received prenatal care and no previous history of lues and with negative serologic test for syphilis, Birthweight > 2500 grams, Negative direct Coombs test, Gestational age between 37 and 41 weeks, < 7 days old, no history of neonatal anoxia and Apgar > 8 at 1 and 5 minutes, normal infants no administration of substances competing for albumin binding site,	Mean TsB levels Not reported Mean free bilirubin 11.5 + 6.0 nmol/L 0.0115 + 0.006 micromol/L Mean Albumin levels 3.33 + 0.3 g/dl correlation between free bilirubin and indirect bilirubin 0.69 (p<0.01)	Serum albumin levels not taken in 6 babies

		no phototherapy, exchange transfusion or human albumin Exclusion: Not reported Setting: Neonatal service Sample Size: Not reported Gender M/F: 25/18 Mean GA: Not reported Mean BW: Not reported Ethnicity: Not reported		
Author: Newman T Year: 1991 Country: USA Ref ID: [86]	Study type: Retrospective case series Evidence level: 3	Diagnosis: Jaundice Criteria: Not reported Exclusion: None Setting:	Mean TsB levels Not reported Mean free bilirubin Not reported Mean Albumin levels Not reported Mean B/A ratio	Abnormal direct bilirubin = direct bilirubin above 95th percentile in each centre (UCSF = $\geq$39micromol/L, Stanford = $\geq$17 micromol/L)

		Hospital Sample Size: 149 (9 from Stanford) Gender M/F: Not reported Mean GA: Not reported Mean BW: Not reported Ethnicity: Not reported	Not reported Direct Bilirubin Not reported Direct bilirubin levels were unexplained in 52% of cases while 24% were laboratory errors. The remainder were as follows; Isoimmunisation = 19 (12.7%) Sepsis or pneumonia = 5 (3.6%) Congestive Heart failure = 5 (3.6%) Multiple anomalies = 2 (1.3%) Pyloric Stenosis = 2 (1.3%) Extreme SGA (possible Rubella) = 1(0.7%) Hypothyroid = 1(0.7%) Choledochal cyst = 1(0.7%) Slightly high aminotransferase levels (100 U/L) = 3(2.0%) Sludge in gallbladder = 1(0.7%)	
Author: Newman T	Study type: Retrospective chart review	Diagnosis: Hyperbilirubinaemia	Routine hyperbilirubinaemia tests Direct Bilirubin Blood type,	

Year: 1990 Country: USA Ref ID: [87]	Evidence level: 3	Criteria: Birthweight > 2500 grams, Hyperbilirubinaemia Exclusion: Low birthweight Setting: Hospital Sample Size: 447 Gender M/F: Not reported Mean GA: Not reported Mean BW: 3440 ± 485 grams Ethnicity: Not reported	Complete blood count, Differential cell count, Reticulocyte count, Platelet count, Morph, Urinalysis Usefulness of tests Possible cause of hyperbilirubinaemia identified from history, physical exam or routine haematocrit done at 4 hours 145/447 (32.4%) Other diagnosis related to hyperbilirubinaemia no made due to routine hyperbil. investigations 13/447 (2.9%) No specific diagnosis related to hyperbilirubinaemia: 214/447 (47.8%) Diagnoses possibly from routine hyperbil investigations not accompanied by other diagnoses	

			58/447 (12.9%) Diagnoses possibly from routine hyperbil investigations accompanied by other diagnoses 17/447 (3.8%)	
Author: Tiker F Year: 2006 Country: Turkey Ref ID: [90]	Study type: Retrospective chart review Evidence level: 3	Diagnosis: Conjugated Hyperbilirubinaemia Criteria: Direct bilirubin >15% of total TsB Elevation in biliary enzymes (gamma glutamyl transpeptidase (GGT), alkaline pjosphatse (ALP), asparttate transaminase (AST) or alanine transaminase (ALT) Exclusion: Not reported Setting: Neonatal Intensive Care Unit Sample Size: 42	Mean age at presentation 240 hours Mean peak TsB levels 292 $\pm$ 193 micromol/L Mean peak conjugated bilirubin 130 $\pm$ 130 micromol/L Diagnoses in conjugated jaundice Culture-proven sepsis: 14/42 (35.7%) Perinatal hypoxia-ischemia: 7/42 (16.7%) Blood group incompatibility: 5/42 (11.9%) Trisomy 21: 3/42 (7.1%) TPN-associated cholestasis (3/42 (7.1%) Neonatal hepatitis: 2/42 (4.8%)	

		Gender M/F: Not reported Mean GA: 37 weeks Mean BW: Not reported Ethnicity: Not reported	Metabolic liver disease: 1/42 (2.4%) Biliary atresia: 1/42 (2.4%) Portal venous thrombosis: 1/42 (2.4%) Unknown: 4/42 (9.5%)	
Author: Sarlik Y Year: 2003 Country: Turkey Ref ID: [89]	Study type: Case series Evidence level: 3	Diagnosis: Prolonged Jaundice Criteria: Jaundiced at day 14 Setting: Neonatal Intensive Care Unit Sample Size: 26 Mean GA: 38 weeks Mean BW: 3164 grams Gender M/F: 15/11 Ethnicity: Not reported Breastfeeding: 96% Mean age jaundice recognised: 19 days: Exclusion: Pre-term babies	Prevalence of prolonged jaundice/hyperbilirubinaemia 31/381 (8.1%) Median bilirubin levels TSB: 246 micromol/L Blood group incompatibility: 7/26 (26.9%) Breastmilk jaundice: 14/26 (53.8%) Possible Biliary Atresia : 1/26 (3.8%) referred to pediatric gastroenterology due to direct bilirubin Inadequate caloric intake: 4/26 (15.4%)	

Author: Hannam S Year: 2000 Country: UK Ref ID: [88]	Study type: Case series Evidence level: 3	Diagnosis: Prolonged Jaundice Criteria: jaundiced at day 14 Setting: Outpatient Sample Size: 154 GA (range): 39(37 – 43) weeks BW (range): 3.2 (1.98 – 4.8 kgs Gender M/F: 96/58 Ethnicity: 89 (57%) Caucasian, 36 (23%) Black, 20 (13%) Asian, 9 (6%) Mediterranean Breastfeeding: 96% Jaundice recognised: Older than 14 days: Exclusion: Not reported	Median bilirubin levels TSB: 179 micromol/L ABO incompatibility: 0/154 (0%) Incidence of G6PD deficiency: 3/59 (5.1%) Infection (UTI): 2/154 (1.3%) Idiopathic: Not reported	G-6-PD testing done where indicated by ethnic background of baby Clinical Examination by a Paediatrician is vital Recommended Investigations in prolonged jaundice ≠ Total & unconugated bilirubin ≠ PCV & G6PD level (where appropriate) ≠ Urine microscopy & culture ≠ Inspection of recent stool sample for bile pigmentation

Phototherapy

Bibliographic Information	Study Type & Evidence Level	Number of Patients/ Characteristics	Intervention & Comparison	Dichotomous outcomes (E:C)	Continuous Outcomes (Mean:SD: N)
<u>Author</u>: NICHHD <u>Year</u>:1985 <u>Country</u>: USA <u>ID</u>: [122]	<u>Methodology</u>: RCT <u>Blinding</u>: Not reported <u>Randomisation</u>: Random numbers table, Sealed envelopes <u>Evidence level</u>: 1^{++}	<u>N</u>: 1339 <u>Inclusion</u>: BW <2000gms or BW between 2000 gms and 2500 gms and TSB >171 micromol/L in 96 hours or BW > 2500 and TSB > 222 micromol/L in 96 hours <u>Exclusion</u>: Rh hemolysis TSB > 171 micromol/L in 24 hours Babies with severe conditions / anomalies who care would be compromised by protocol	<u>Group 1</u>: Usual care <u>Group 2</u>: Conventional phototherapy Conventional Phototherapy (Air Shields) consisted of 96 hours (with 30 min breaks every 4 hours for feeding etc) Daylight fluorescent bulbs 35 – 55cm above the baby. Baby naked and with eye pads (changed every 8 hours) Irradiance measured with a light monitoring badge	<u>ET</u>: **BW less than 2000 grams** Group 1: 22/462 Group 2: 110/460 **BW between 2000 gms and 2500 gms** Group 1: 3/70 Group 2: 18/71 **BW above 2500 gms** Group 1: 14/140 Group 2: 23/136	

		Demographics: **BW less than 2000 gms** Gender (M/F) :Not reported Mean GA: Not reported Mean BW: Not reported Mean age at entry to study: 24.2 + 8.0 hours Mean TSB: 97 + 33 micromol/L **BW between 2000 gms and 2500 gms** Gender (M/F): 73/66 Mean GA: Not reported Mean BW: Not reported Age at entry to study: 62.6 + 17.1 hours Mean TSB: 212 + 37 micromol/L **BW > 2500** Gender (M/F): 157/119 Mean GA: Not reported	Babies received 25ml/kg of body weight extra fluids	:	

		Mean BW: Not reported Age at entry to study: 64.8 $\pm$ 18.4 hours Mean TSB: 15.6 $\pm$ 2.49 MG/DL			
Author: Martinez J Year: 1993 Country: USA ID: [126]	Methodology: RCT Blinding: Not reported Randomisation: Computer-generated Evidence level: 1^+	N: 125 Inclusion: TSB > 291 micromol/L Exclusion: Congenital anomalies Neonatal complications Birthweight below 10^{th} percentile or above 90^{th} percentile Venous hematocrit >65% Significant bruising Large cephalhematoma Haemolytic disease	Group 1: Continue breastfeeding Group 2: Discontinue breastfeeding, substitute formula feeds Group 3: Discontinue breastfeeding, substitute formula feeds, add Conventional phototherapy Group 4: Continue breastfeeding, add phototherapy Conventional phototherapy Conventional Phototherapy consisted of	ET: Group 1: 0/25 Group 2: 0/26 Group 3: 0/38 Group 4: 0/36 Treatment failure: Group 1: 6/25 Group 2: 5/26 Group 3: 1/38 Group 4: 5/36	TSB levels – change **Groups 1 + 2** 48 hours: -27 $\pm$ 43 micromol/L **Groups 3 + 4** 48 hours: -72 $\pm$ 380 micromol/L

		Demographics: Gender (M/F):70/55 Mean GA: 39.2 + 0.9 weeks Mean BW: 3404 + 361gms Age at entry to study: Not reported Mean TSB: 306 + 12 micromol/L	Quartz halide spot unit Irradiance = 10microW/cm^2 Light band = 400 – 480 nm Babies were naked in a bassinette with their eyes patched Phototherapy discontinued at TSB < 231 micromol/L		

Author: Sisson T Year: 1971 Country: USA ID: [123]	Methodology: RCT Blinding: Not reported Randomisation: Coin toss Evidence level: 1^-	N: 35 Inclusion: TSB > 162 micromol/L Exclusion: Sepsis, Cephalhaematoma Massive ecchymosis Demographics: Gender (M/F) :16/19 Mean GA: Not reported Mean BW: 2567 $\pm$ 709 gms Age at entry to study: Not reported Mean TSB: 193 micromol/L	Group 1: No treatment Group 2: Conventional phototherapy Conventional Phototherapy consisted of 10 (20 watt) fluorescent lamps Units were 45 cm above the baby and had a Plexiglas shields to block ultraviolet radiation. Canopies were vented so lamp heat was dissipated Babies removed for no more than 20 minutes a time for feeding etc Babies were naked except for eye shields and diapers Light band = 410 – 490 Phototherapy discontinued at TSB < 145 micromol/L	ET: Group 1: 2/14 Group 2: 3/21 Treatment failure: Group 1: 9/16 Group 2: 2/19	TSB levels – change Incomplete data Mean change in TSB: Incomplete data Time to max TSB (hours): Incomplete data

Author: Meloni T Year: 1974 Country: Italy ID: [125]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1-	N: 24 Inclusion: TSB > 188 micromol/L Exclusion: Unclear Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: Not reported Age at entry to study: Not reported Mean TSB: 209 ± 24 micromol/L	Group 1:No treatment Group 2: Conventional phototherapy Conventional Phototherapy consisted of continuous phototherapy for 96 - 120 hours 8 cool white fluorescent tubes which deliver (at mattress level) 13.5 ± 3.5 watts/m^2	ET: Group 1: 6/12 Group 2: 2/12 Treatment failure: Group 1: 6/12 Group 2: 2/12	

Author: Ju S Year: 1991 Country: Taiwan ID: [127]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1^-	N: 29 Inclusion: TSB between 205 and 256 micromol/L Full term singletons Normal pregnancy Normal birth/caesarean Birthweight between 10^{th} and 90^{th} percentile Apgar scores $\geq$ 7 at 1 and 5 minutes Exclusion: Perinatal complication Congenital anomalies Possible haemolysis Demographics: Gender (M/F): 12/14 Mean GA: 39.0 $\pm$ 0.8 weeks Mean BW: 3364 $\pm$ 334 gms Age at entry to study: 97.2 $\pm$ 22.4 hours Mean TSB: 221 $\pm$ 13 micromol/L	Group 1: No treatment Group 2: Conventional phototherapy : Conventional Phototherapy consisted of a portable unit of 4 blue and 4 white 20-watt fluorescent lamps Irradiance at baby skin levels was 5-6microW/cm^2/nm Babies moved every 4 hours for feeding Phototherapy discontinued at TSB < 205 micromol/L	ET: Group 1: 0/13 Group 2: 0/13 Treatment failure: Group 1: 4/17 Group 2: 0/13	

Author: Lewis H Year: 1982 Country: UK ID: [124]	Methodology: RCT Blinding: Not reported Randomisation: Random numbers table Evidence level: 1^{+}	N: 40 Inclusion: Birthweight > 2500gms, Gestational Age > 37 weeks, TSB $\geq$ 250 micromol/L Exclusion: Perinatal asphyxia, Apgar score <5 at 4 minutes, Positive DAT test Demographics: Gender (M/F): 27/13 Mean GA: Not reported Mean BW: 3200 $\pm$ 260 gms Age at entry to study: 84 hours Mean TSB: 263 micromol/L	Group 1: Conventional Phototherapy Group 2: Conventional Phototherapy - Delayed (initiated if TSB rose to $\geq$ 320 micromol/L : Conventional Phototherapy consisted of a Vickers 80 white light phototherapy unit mounted 50 cm above the baby. Babies were blindfolded, naked except for a napkin while nursing and were turned every 3 hours. Phototherapy discontinued at TSB < 250 micromol/L	ET: Group 1: 0/20 Group 2: 0/20 Treatment failure: Group 1: 0/20 Group 2: 3/20	
Author: Holtrop P	Methodology: RCT	N: 70	Group 1: Conventional phototherapy	ET: Group 1: 0/37	Mean duration Group 1: Not reported

Year: 1992 Country: USA ID: [144]	Blinding: Not reported Randomisation: Computer generated Evidence level: 1^+	Inclusion: Birthweight <2500, Birthweight between 10^{th} and 90^{th} percentile, >24 1 day old, no congenital anomalies, no Rh incompatibility TSB >85 micromol/L at BW <1000gms TSB >103 micromol/L at BW 1000 - 1200gms TSB >120 micromol/L at BW 1200 - 1400gms TSB >137 micromol/L at BW 1400 - 1600gms TSB >1071 micromol/L at BW 1600 - 1800gms TSB >12 at BW 1800 - 2200gms TSB 12 - 15 at BW 2200 - 2500gms Exclusion: Not reported Demographics:	Group 2: Double phototherapy (Conventional phototherapy + Fiberoptic phototherapy) Single Conventional phototherapy consisted of either 1/ if baby was in an incubator, a standard unit (Olympic Bili-lite) with 4 white and 4 blue fluorescent lamps 35 cm above the baby. Irradiance at skin level was 9.2microW/cm^2/nm Light range was 425 – 475 Or 2/ if baby was on a radiant warmer, 3 halogen lights on each side(Air Shields7850) with an irradiance of 7microW/cm^2/nm Double phototherapy consisted of single Conventional phototherapy as above combined with a 'Wallaby' fiberoptic blanket measuring 10 X 35 cm. Mean irradiance on the blanket's surface was 8.2microW/cm^2/nm	Group 2: 0/33 Kernicterus: Group 1: 0/37 Group 2: 0/33 Mortality: Group 1: 0/37 Group 2: 0/33 Rebound jaundice: Group 1: 14/37 Group 2: 12/33	Group 2: Not reported Mean change in TSB: Group 1:- 45 $\pm$ 18 micromol/L Group 2: - 28 $\pm$ 20 micromol/L

			Babies wore eye patches and wore disposable diapers cut to allow maximum skin exposure Fluids were administered on clinician advice		
Author: Nuntnarumit P Year: 2002 Country: Thailand ID: [129]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1⁻	N: 51 Inclusion: BW > 2500gms GA > 37 weeks TSB≥ 205 micromol/L at 24-48 hours TSB≥ 256 micromol/L at 49-72 hours TSB≥ 291 micromol/L at ≥72 hours Exclusion: Babies who had been on ventilator support or incubator, Babies who had been on phototherapy, Direct hyperbilirubinaemia Demographics: Gender (M/F) : 34/17	Group 1: Single Conventional phototherapy Group 2: Double Conventional phototherapy Single Conventional phototherapy consisted of 3 daylights and 2 blue lights 38 cm above the baby. Double Conventional phototherapy consisted of single phototherapy plus an additional bank of 8 20watt daylight fluorescents lamps 32 cm below the baby. A ventilated fan was used to prevent overheating Target irradiance was 9-10microW/cm^2/nm Phototherapy was discontinued when TSB <205 micromol/L at <96 hours of age or TSB <256	ET: Group 1: 0/27 Group 2: 0/24 Rebound jaundice: Group 1: 1/27 Group 2: 0/24	Mean duration Group 1: 43.7 ± 17.5 hours Group 2: 34.9 ± 12.6 hours Mean change in TSB: Group 1: -98 ± 46 micromol/L Group 2: - 156± 67 micromol/L Stools/day: Group 1: 2.8 ± 1.7 Group 2: 2.2 ± 1.4

		Mean GA: 38.7 + 1.29 weeks Mean BW: 3104 + 284 Age at entry to study 74.6 + 27.4 Mean TSB: 316 + 47 micromol/L	micromol/L at > 96 hours of age		
Author: Boonyarittipong P Year: 2008 Country: Thailand ID: [130]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1^{-}	N: 60 Inclusion: Full term (37– 42 weeks), Birthweight >2500gms, Apgar > 6 T 1 and 5 minutes TSB between 222 -340 micromol/L, Nonhemolytic hyperbilirubinaemia Exclusively breastfed, Exclusion: Not reported Demographics: Gender (M/F): 32/28	Group 1: Single Conventional phototherapy Group 2: Double Conventional phototherapy Single Conventional phototherapy consisted of 4 blue and 2 daylight fluorescent lamps at least 30 cm above the baby Mean irradiance was 32.7 + 2.6microW/cm^2/nm Baby wore eye patches and cotton diapers Double Conventional phototherapy (Neonatal Jaundice phototherapy apparatus/XHZ) was single phototherapy and an additional bank of 4 blue fluorescent lamps 25 cm beneath the	ET: Group 1: 0/30 Group 2: 0/30 Treatment failure: Group 1: 0/30 Group 2: 0/30	Mean change in TSB: Group 1: -111 + 39 micromol/L Group 2: -144 + 36 micromol/L Stools/day: Group 1: 2.8 + 1.7 Group 2: 2.2 + 1.4

		Mean GA: 38.6 + 1.15 weeks Mean BW: 3130 + 311 gms Age at entry to study Not reported Mean TSB: 260 + 30 micromol/L	bassinette. A fan was used to prevent overheating Mean irradiance of overhead unit was 33.7 + 1.6microW/cm^2/nm and not reported for the unit underneath the baby Phototherapy was discontinued at TSB < 222 micromol/L or phototherapy >48 hours		
Author: Sarici S Year: 2001 Country: Turkey ID: [132]	Methodology: RCT Blinding: Blind allocation Randomisation: Sequential Evidence level:	N: 100 Inclusion: Birthweight > 2500 gms, Nonhemolytic indirect hyperbilirubinaemia, Normal Reticulocyte count, Negative DAT, No evidence of blood group isoimmunization TSB > 256 micromol/L	Group 1: Conventional phototherapy Group 2: Fiberoptic phototherapy Conventional Phototherapy (Ohio Medical Products) consisted of a bank of 5 daylight fluorescent lamps 30cm above the baby Fiberoptic phototherapy (Walley II Phototherapy System) consisted of a single pad	ET: Group 1: 0/50 Group 2: 0/50 : Erythema: Group 1: 1/50 Group 2: 1/50 Watery stools: Group 1: 3/50	Mean duration: Group 1: 49.4 + 14.4 hours Group 2: 61.0 + 13.1 hours Mean change in TSB: Group 1: 125 + 39 micromol/L Group 2: 111 + 42 micromol/L

	1+	Exclusion: Direct hyperbilirubinaemia, Enclosed haemorrhage, Infection, congenital malformations Demographics: Gender (M/F): 54/46 Mean GA: 39.0 + 0.7 weeks Mean BW: 3380 + 359 gms Age at entry to study 105.4 + 42.8 hours Mean TSB: 308 + 47 micromol/L	(7.6 X 35.5 cm) Babies in both groups were placed in a prone position and all babies wore disposable diapers. Babies in the phototherapy group wore eye patches Irradiance and light range were not reported Phototherapy considered to have failure if two consecutive measures showed an increase in TSB	Group 2: 3/50 Rebound jaundice: Group 1: 3/50 Group 2: 2/50 Treatment failure: Group 1: 0/50 Group 2: 4/50	
Author: Gale R Year: 1990 Country: USA ID: [133]	Methodology: RCT Blinding: Not reported Randomisation: Not reported	N: 42 Inclusion: Full-term (>37 weeks), No haemolytic jaundice TSB > 200 micromol/L but if babies had rapidly increasing TSB levels they could be entered into the study before they reached 200 micromol/L	Group 1: Conventional phototherapy Group 2: Fiberoptic phototherapy Conventional Phototherapy (Air Shields PT 53-3) consisted of a standard phototherapy unit (both daylight and blue lamps) positioned above the baby. Babies were naked, with eyes	ET: Group 1: 0/22 Group 2: 0/20	Mean duration of phototherapy Group 1: Not reported Group 2: Not reported

	Evidence level: 1-	Exclusion: Evidence of hemolysis Demographics: Gender (M/F): Not reported Mean GA: 39.6 ± 1.6 weeks Mean BW: 3197 ± 475 Age at entry to study Not reported Mean TSB: 186 ± 86 micromol/L	covered, and were alternate between prone and supine position every 6 hours. Irradiance at blanket level was 7.0 ± 0.5microW/cm^2/nm. Fiberoptic phototherapy (Wallaby Phototherapy System) consisted of a single fiberoptic pad linked to a lightbox with 150-watt halogen lamp and a fan with 150.ft^2/minute air volume. Irradiance spectrum was between 425 and 475 nm. Irradiance at blanket level was 7.0 ± 0.5microW/cm^2/nm. Babies were placed naked on the blanked. While nursing the mother could hold the baby wrapped in the blanket In both group babies were kept on phototherapy for 48 hours but could be withdrawn at any stage.		
Author: Dani C Year:	Methodology: RCT Blinding:	N: 23 Inclusion: Preterm (GA < 34 weeks), No haemolytic jaundice, not on	Group 1: Conventional phototherapy Group 2:	ET: Group 1: 0/12 Group 2: 0/11	Mean duration of phototherapy Group 1: 43.0 ± 3.1 hours Group 2: 38.7 ± 4.5 hours

2004 Country: Italy ID: [146]	Not reported Randomisation: Allocation method not reported but sealed envelopes used Evidence level: 1^-	respiratory support, Clinically stable. Exclusion: Major congenital malformations, patent ductus arteriosus, intracranial haemorrhage, Perinatal asphyxia, receiving cardiovascular drugs Demographics: Gender (M/F): Not reported Mean GA: 31.0 ± 1.8 weeks Mean BW: 1468 ± 400 gms Age at entry to study 63.2 ± 15.0 hours Mean TSB: 241 ± 9 micromol/L	Fiberoptic phototherapy Conventional Phototherapy consisted of a Photo-Therapie 800 system. Baby was naked except for eye patches and in a supine position. Irradiance and light range not reported Fiberoptic phototherapy (BiliBlanket) consisted of a mat that covered the baby up to the upper abdomen. Irradiance and light range not reported To avoid trans-epidermal water loss the babies were placed in incubators with a thermo-monitoring system to maintain normal body temperature (46.5^{O}C) at a relative humidity of 60%.		Mean change in TSB: Group 1: -69 ± 13 micromol/L Group 2: -62 ± 17 micromol/L
Author: Al-Alaiyan S Year: 1996	Methodology: RCT Blinding: Not reported	N: 46 Inclusion: GA > 36 weeks, Nonhemolytic jaundice	Group 1: Conventional phototherapy Group 2: Fiberoptic phototherapy	ET: Group 1: 0/15 Group 2: 0/16 Group 3: 0/15	Mean duration of phototherapy Group 1: 52.8 ± 24.8 hours Group 2: 47.5 ± 24.8 hours Group 3: 50.7 ± 24.8 hours

Country: Saudi Arabia ID: [128]	Randomisation: Allocation method not reported but shuffled, sealed envelopes used Evidence level: 1^{-}	Age > 1 day, Normal hemoglobin, No evidence of blood group incompatibility, Exclusion: Not reported Demographics: Gender (M/F): 23/23 Mean GA: 37.9 $\pm$ 2.08 weeks Mean BW: 2921 $\pm$ 696 gms Age at entry to study 37.9 $\pm$ 24.1 hours Mean TSB: 185 $\pm$ 56 micromol/L	Group 3: Combined phototherapy and fiberoptic phototherapy Conventional Phototherapy (Air Shields Fluoro-Lite) consisted of a standard unit of blue and white fluorescent bulbs 50 cm from the baby. Mean irradiance was 11.6 $\pm$ 2.2microW/cm^2/nm Light range = 425 – 475 nm Phototherapy was interrupted for feeding etc for an average of 115 minutes per day. Babies were naked except for eye patches. Fiberoptic phototherapy (BiliBlanket) consisted of a halogen lamp linked to a fiberoptic blanket. Mean irradiance was 22.3 $\pm$ 2.2microW/cm^2/nm Light range = 400 – 500 nm Fiberoptic phototherapy was continuous. Combined therapy consisted of both conventional and fiberoptic phototherapy as	Rebound jaundice: Group 1: 0/15 Group 2: 0/16 Group 3: 0/15	Mean change in TSB: Group 1: -14 $\pm$ 28 micromol/L Group 2: 19 $\pm$ 35 micromol/L Group 3: -23 $\pm$ 39 micromol/L :

			above.		
Author: Pezzati M Year: 2000 Country: Italy ID: [150]	Methodology: RCT Blinding: Clinician blinded Randomisation: Allocation method not reported but shuffled, sealed envelopes used Evidence level: 1^+	N: 39 Inclusion: Pre-term babies with hyperbilirubinaemia > 171 micromol/L Exclusion: Malformations, Perinatal asphyxia, Respiratory distress, renal or gastrointestinal abnormalities, Patent ductus arteriosus, hypotension, Hypertension, Infection, Anaemia, polycythemia Demographics: Gender (M/F): 21/18 Mean GA: 34.3 weeks	Group 1: Conventional phototherapy Group 2: Fiberoptic phototherapy Conventional Phototherapy (Photo grph – Therapie 800) consisted of a standard unit of blue lamp with two filters (infrared and uiltraviolet) . Babies were naked except for eye patches. Fiberoptic phototherapy (BiliBlanket)	ET: Group 1: 0/19 Group 2: 0/20	

		Mean BW: 2101 grams Age at entry to study Not reported Mean TSB: Not reported			
Author: Holtrop P Year: 1992 Country: USA ID: [134]	Methodology: RCT Blinding: Not reported Randomisation: Computer generated Evidence level: 1^+	N: 26 Inclusion: Birthweight >2500 gms, Age > 1 day, No Rh incompatibility, Clinical need for phototherapy Exclusion: Not reported Demographics: Gender (M/F): 17/9 Mean GA: 38.1 $\pm$ 2.5 weeks Mean BW: 3377 $\pm$ 541 gms Age at entry to study 66.3 $\pm$ 19.4 hours	Group 1: Conventional phototherapy Group 2: Fiberoptic phototherapy Conventional phototherapy (Olympic Bili-lite) consisted of an overhead bank of 4 white and 4 blue 35 cm above the baby. Babies were naked except for diapers and eye patches. Babies were removed for feeding. Mean irradiance was 9.2 $\pm$ 0.9microW/cm^2/nm Fiberoptic phototherapy (Wallaby Phototherapy System) consisted of a cummerbund which was wrapped around the torso. Babies wore eye patches. Mean irradiance was 8.2 $\pm$ 1.2microW/cm^2/nm	ET: Group 1: 0/14 Group 2: 0/12 Treatment failure: Group 1: 1/14 Group 2: 3/12	Mean duration of phototherapy Group 1: Not reported Group 2: Not reported :

		Mean TSB: 231 ± 24 µmol/L	Babies were removed form the study if the TSB rose by more than 9 micromol/L/h		
Author: Pezzati M Year: 2002 Country: Italy ID: [135]	Methodology: RCT Blinding: Not reported Randomisation: Not report but sealed envelopes used Evidence level: 1^{+}	N: 41 Inclusion: Exclusion: Demographics: Gender (M/F) : Not reported Mean GA: 39.6 ± 1.2 weeks Mean BW: 3236 ± 425 gms Age at entry to study Not reported Mean TSB: 296 ± 32 µmol/L	Group 1: Conventional Phototherapy Group 2: Fiberoptic Phototherapy Conventional phototherapy ("Photo-Therapie 800") consisted of a unit incorporating a metal vapour discharge blue lamp with 2 filters (an infrared filter and a Plexiglas ultraviolet filter). A fan was fitted to remove heat generated by lamp. Fiberoptic phototherapy (BiliBlanket PT) consisted of a 140W quartz halogen lamp with a built-in dichroic reflector with low infrared and ultraviolet radiation reflectivity. Light range was restricted to 400 – 550 nm. All babies were naked in a supine position at a stabilized room temperature.	ET: Group 1: 0/21 Group 2: 0/20	Mean duration of phototherapy Group 1: Not reported Group 2: Not reported Mean change in TSB: Group 1: -55 ± 16 micromol/L Group 2: -51 ± 23 micromol/L
Author: Romagnoli C	Methodology: RCT	N: 136	Group 1: Conventional phototherapy	ET: Group 1: 2/33	Mean duration of phototherapy Group 1: 90.2 ± 24.3 hours

Year: 2006 Country: Italy ID: [145]	Blinding: No reported Randomisation: Not reported but sealed envelopes used Evidence level: 1^+	Inclusion: TSB> 103 micromol/L GA ≤ 30 weeks Exclusion: Not reported Demographics: Gender (M/F): 72/64 Mean GA: 27.9 ± 1.4 weeks Mean BW: 1019 ± 283 gms Age at entry to study 38.3 ± 7.1 hours Mean TSB: 109 ± 5 micromol/L	Group 2: Fiberoptic (Wallaby) phototherapy Group 3: Fiberoptic (BiliBlanket) phototherapy Group 4: Combined conventional and Fiberoptic (Wallaby) phototherapy Conventional phototherapy consisted of standard phototherapy composed of 4 fluorescent lamps and 4 blue lamps 40cm above the baby. Irradiance at skin level was 22 – 24 microW/cm^2/nm. Babies were naked except for eye patches and disposable diapers. Baby position was changed from prone to supine and vice versa every 6 hours. Fiberoptic Wallaby phototherapy consisted of a 10.1 X 15.2 cm pad linked to a 150W quartz halogen lamp. A light filter is placed between the lamp and the fiberoptic bundle to allow only 400 – 550 nm range through. Irradiance at	Group 2: 2/35 Group 3: 1/35 Group 4: 0/33 Erythema: Group 1: 10/33 Group 2: 9/35 Group 3: 8/35 Group 4: 12/33 Treatment failure: Group 1: 2/33 Group 2: 4/35 Group 3: 1/35 Group 4: 0/33	Group 2: 92.1 ± 43.3 hours Group 3: 94.4 ± 43.3 hours Group 4: 75.1 ± 23.6 hours Max TSB:: Group 1: 157 ± 43 micromol/L Group 2: 169 ± 56 micromol/L Group 3: 161 ± 44 micromol/L Group 4: 130 ± 22 micromol/L

			skin level was 8 – 10 microW/cm^2/nm. Baby position was changed from prone to supine and vice versa every 6 hours. Fiberoptic BiliBlanket phototherapy consisted of an 11 X 13 cm pad linked to a 150W tungsten halogen lamp. A light filter is placed between the lamp and the fiberoptic bundle to allow only 400 – 550 nm range through. Irradiance at skin level was 35microW/cm^2/nm. Baby position was changed from prone to supine and vice versa every 6 hours. Combined phototherapy consisted of conventional phototherapy as above and the fiberoptic Wallaby system as above.		
Author: Tan K Year: 1997 Country: Singapore	Methodology: RCT Blinding: Not reported Randomisation: Lottery method	N: 171 Inclusion: Nonhemolytic jaundice, TSB > 256 micromol/L or >222 micromol/L before 48 hours, Exclusion:	Group 1: Conventional Phototherapy Group 2: Fiberoptic phototherapy - Standard Group 3: Fiberoptic phototherapy – Large	ET: Group 1: 0/44 Group 2: 0/42 Group 3: 0/43 Group 4: 0/42 Rebound jaundice: Group 1: 1/44	Mean duration of phototherapy Group 1: 62.6 $\pm$ 24.8 hours Group 2: 87.0 $\pm$ 39.5 hours Group 3: 82.6 $\pm$ 38.3 hours Group 4: 64.8 $\pm$ 35.2 hours :

ID: [131]	Evidence level: 1^+	Not reported Demographics: Gender (M/F): 96/75 Mean GA: 38.5 + 1.5 weeks Mean BW: 3114 + 415 gms Age at entry to study 96.9 + 30.9 days Mean TSB: 262 + 17 micromol/L	Group 4: Fiberoptic phototherapy - Double Conventional phototherapy consisted of seven overhead daylight fluorescent lamps arrange din an arc 35cm above the baby. The baby was kept unclothed except for eye coverings. Irradiance was 6.73 microW/cm^2/nm The standard fiberoptic (BiliBlanket) phototherapy consisted of a pad, 11 X 20 cm (illuminated part was 11 X 13cm) which was used without its sheath and at maximal power. Irradiance was an average of 19.01 microW/cm^2/nm when measured at the centre and at the four corners. The standard fiberoptic phototherapy consisted of a pad, 11 X 24 cm (illuminated part was 11 X 16cm) which was used without its sheath and at maximal power. The irradiance was calculated to be 23% more than that of the standard fiberoptic pad. The double fiberoptic phototherapy consisted of two standard pads one on the back and one	Group 2: 0/42 Group 3: 0/43 Group 4: 1/42 Treatment failure: Group 1: 0/44 Group 2: 4/42 Group 3: 3/43 Group 4: 0/42	

			the front of the baby. Phototherapy was terminated when TSB <188 micromol/L on at least two occasions Phototherapy was deemed to have failed when TSB values exceeded start level on at least two occasions and when direct bilirubin was minimal < 0.6 MG/DL		
Author: Van Kamm A Year: 1998 Country: Netherlands ID: [147]	Methodology: RCT Blinding: Not reported Randomisation: Not reported but sealed envelopes used Evidence level: 1^+	N: 124 Inclusion: Preterm babies with birthweight <2000gms, Nonhaemolytic jaundice Exclusion: Prior phototherapy, Met criteria for exchange transfusion Demographics: Gender (M/F) : 72/52 Mean GA: 29.7 $\pm$ 2.4 weeks	Group 1: Conventional phototherapy Group 2: Fiberoptic phototherapy Conventional phototherapy consisted of 4 overhead fluorescent lamps arranged in an arc 40 cm above the baby. Baby was naked except for eye patches. The light range is in the 380 – 480 nm range. Irradiance level was 16 microW/cm^2/nm Fiberoptic phototherapy (Ohmeda BiliBlanket) consisted of a halogen lamp illuminating a flat mat using a fiberoptic attachment containing 2400 optic givers woven into the mat. Baby was naked.	ET: Group 1: 3/68 Group 2: 4/56 Treatment failure: Group 1: 27/68 Group 2: 29/56	Mean duration of phototherapy Group 1: Not reported Group 2: Not reported: Mean change in TSB: Group 1: -2 $\pm$ 25 micromol/L Group 2: -2 $\pm$ 20 micromol/L :

		Mean BW: 1250 + 353 gms Age at entry to study 26.5 + 17.5 Mean TSB: 94 + 36 micromol/L	The illuminating part of the mat is 11 X 13 cm. The light range is in the 400 – 550 nm range. Irradiance level was 35 microW/cm^2/nm If TSB levels increased above predetermined cut-offs double phototherapy was started using conventional phototherapy as above.		
Author: Dani C Year: 2001 Country: Italy ID: [148]	Methodology: RCT Blinding: Not reported Randomisation: Not reported but sealed envelopes used Evidence level: 1$^+$	N: 20 Inclusion: Aged < 3 days, Gestational age between 31 and 36 weeks, Clinically stable, No major congenital malformations Exclusion: Non-haemolytic jaundice Demographics: Gender (M/F): Not reported Mean GA: 34.4 + 1.2 weeks Mean BW: 2600 + 382	Group 1: Conventional phototherapy Group 2: Fiberoptic phototherapy Conventional phototherapy consisted of a Photo-Therapie 800 Fiberoptic phototherapy was an Ohmeda BiliBlanket which was wrapped around the baby's torso. Babies were naked except for eye patches and were in a supine position. Phototherapy was initiated when TSB > 220micromol/L and discontinued when TSB <	ET: Group 1: 0/10 Group 2: 0/10	Mean duration of phototherapy Group 1: 25.8 + 3.4 hours Group 2: 24.0 + 2.5 hours Mean change in TSB: Group 1: Incomplete data Group 2: Incomplete data

		Age at entry to study 49.5 + 2.9 hours Mean TSB: 227 + 10 micromol/L	170 micromol/L.		
Author: Morris B Year: 2008 Country: USA ID: [138]	Methodology: RCT Blinding: Single-blind – outcome assessors were unaware of allocation Randomisation: Computer-generated Evidence level: 1^{++}	N: 1974 Inclusion: Birthweight between 5001 and 1000 grams Between 12 and 36 hurs of age Exclusion: Terminal condition (Ph <6.8 or persistent bradycardia with hypoxaemia for >2 hours), Previous phototherapy, Major congenital anomaly, Hydrops fetalis, Severe haemolytic disease, Congenital nonbacterial infection, Judgement at parents may be able to return for final assessment at 18 – 22 months	Group 1: Early Phototherapy – begun when Day 1 – 7 TSB > 85 micromol/L Day 8 – 14 TSB > 120 micromol/L Group 2: Phototherapy at TSB $\geq$ 137 micromol/L for BW 501 – 750 grams Or 171 micromol/L for BW 751 – 1000 grams TSB was measured daily. Irradiance was 15 – 40 $\mu w/cm^2/nm$ and was increased if TSB > 222 micromol/L in BW 501 – 750 grams or TSB > 256 in BW 751 – 1000 grams Exchange transfusion was indicated TSB exceeded threshold after 8 hours of intensive	ET: Group 1: 2/990 Group 2: 3/984 Intensive phototherapy: Group 1: 3/990 Group 2: 13/984 Mortality: Group 1: 209/990 Group 2: 201/984 **18 – 22 months** Mortality Group 1: 230/946 Group 2: 218/944 RR = 1.05 (95%CI: 0.90, 1.22)	Max TSB: Group 1: 120 + 31 micromol/L Group 2: 168 + 36 micromol/L

		Demographics: Gender (M/F) : 1013/961 Mean GA: 26.0 + 2.0 weeks Mean BW: 777 + 134 grams Mean age at entry to study: Not reported Mean TSB: Not reported for all babies	phototherapy	Neurodevelopmental impairment Group 1: 235/902 Group 2: 275/902 RR = 0.86 (95%CI: 0.74, 0.99)	
Author: Valdes O Year: 1971 Country: USA ID: [139]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1-	N: 75 Inclusion: Birthweight < 2500 grams Exclusion: Positive Coombs test, ABO incompatibility, Sepsis Demographics: Gender (M/F): Not reported	Group 1: Phenobarbital Group 2: Phototherapy Group 3: Phenobarbital + Phototherapy Group 4: No treatment		Max TSB: Group 1: 96 + 57 micromol/L Group 2: 58 + 52 micromol/L Group 3: 63 + 58 micromol/L Group 4: 140 + 53 micromol/L

		Mean GA: Not reported Mean BW: 1766 grams Age at entry to study: Not reported Mean TSB: Not reported			
Author: Costello S Year: 1994 Country: Australia ID: [149]	Methodology: RCT Blinding: Not reported Randomisation: Lottery method Evidence level: 1^+	N: 44 Inclusion: Gestational age between 27 and 36 weeks TSB > 125 micromol/L) (increased with age (hours) and birthweight Exclusion: Not reported Demographics: Gender (M/F): Not reported Mean GA: 32.0 ± 0.54 weeks Mean BW: 1614 ± 140 gms Age at entry to study 56.6 ± 37.0 hours	Group 1: Conventional Phototherapy Group 2: Fiberoptic phototherapy Conventional phototherapy consisted of a standard system of four white and 4 blue fluorescent lamps 50cm above the baby with an intensity of 8 microW/cm^2/nm Fiberoptic phototherapy (BiliBlanket) with a constant setting of 35microW/cm^2/nm. Baby was nursed in an open cot or isolette and turned at regular intervals from prone to supine positions. Eyes pads were used for babies <1500gms.	ET: Group 1: 0/24 Group 2: 0/20 Treatment failure: Group 1: 3/24 Group 2: 1/20	Mean duration of phototherapy Group 1: 44.0 ± 42.8 hours Group 2: 42.0 ± 39.1 hours Max TSB: Group 1: 210 ± 58 micromol/L Group 2: 198 ± 53 micromol/L

		Mean TSB: Not reported			
Author: Bertini G Year: 2008 Country: Italy ID: [152]	Methodology: RCT Blinding: Not reported Randomisation: Not reported but sealed envelopes used Evidence level: 1+⁻	N: 31 Inclusion: TSB $\geq$ 171 micromol/L, Gestational ages < 34 weeks, Age $\leq$ 7days, Did not require respiratory support, Clinically stable Exclusion: Malformations, Perinatal asphyxia, Patent ductus arteriosus, intracranial haemorrhage, hypotension, Hypertension, Infection, Anemia (venous Hb<10g/dl), Polycythemia (venous Hb>22 g/dl), Infants receiving cardiovascular drugs.	Group 1: Conventional phototherapy Group 2: LED Phototherapy Conventional phototherapy (Photo-Therapie 800) incorporating a metal vapour discharge blue lamp with two filters (an infrared cut-off filter and a Plexiglas ultraviolet cut-off filter). 20 cm above the baby. LED phototherapy (Natus NeoBlue system). Light range 450-470nm spectrum. Irradiance was at the intensive setting at 30-35 microW/cm^2/nm. Unit was placed 30cm above the baby. All babies were placed in incubators with a thermo-monitoring system to maintain a normal body temperature (36.5^{o}C) at a relative humidity of 60%. Babies received full enteral feeding with human milk. Babies were naked except for eye patches and were in a supine position.	ET: Group 1: 0/14 Group 2: 0/17	Mean duration of phototherapy Group 1: 38.7 $\pm$ 5.0 hours Group 2: 34.0 $\pm$ 12.0 hours TSB levels – change Group 1: -62 $\pm$ 24 micromol/L Group 2: -55 + 5 micromol/L :

		Demographics: Gender (M/F): Not reported Mean GA: 30.7 + 2.0 weeks Mean BW: 1192 + 238 gms Age at entry to study 64.4 + 15.2 hours Mean TSB: 200 + 16 micromol/L	Phototherapy discontinued at <145 micromol/L		
Author: Seidman D Year: 2000 Country: Israel ID: [136]	Methodology: RCT Blinding: Open label study Randomisation: Computer generated Evidence level: 1^{+}	N: 69 Inclusion: Full-term (Gestational age > 37 weeks), Jaundice according to AAP criteria for phototherapy Exclusion: None reported Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: Not reported	Group 1: Conventional phototherapy Group 2: LED phototherapy Conventional phototherapy (Micro-lites PTL 68-1) units equipped with 3 halogen quartz bulbs. Irradiance was 5-6 microW/cm^2/nm. LED phototherapy consisted of 6 focussed arrays each with 100 3-mm blue LED's. Unit was placed 50cm above the baby, to achieve an irradiance of 5-6microW/cm^2/nm. All babies were placed in a crib and were naked	ET: Group 1: 0/35 Group 2: 0/34	Mean duration of phototherapy Group 1: 32.0 + 17.0 hours Group 2: 31.0 + 17.0 hours Mean change in TSB: Group 1: -44 + 58 micromol/L Group 2: -44 + 46 micromol/L

		Age at entry to study Not reported Mean TSB: 251 + 77 micromol/L	except for diapers and eye coverings.		
Author: Seidman D Year: 2003 Country: Israel ID: [137]	Methodology: RCT Blinding: Not reported Randomisation: Computer generated Evidence level: 1^+	N: 114 Inclusion: AAP criteria for phototherapy, Exclusion: Not reported Demographics: Gender (M/F): Not reported Mean GA: 39.5 + 1.5 weeks Mean BW: Not reported Age at entry to study 53.9 + 37.8 hours Mean TSB: 251 + 73 micromol/L	Group 1: Conventional phototherapy Group 2: LED phototherapy - Blue Group 3: LED Phototherapy - Blue-Green Conventional phototherapy (Air Shields Micro-lites PTL 68-1) units equipped with 3 halogen quartz bulbs. Irradiance was 5-6 microW/cm^2/nm. Blue LED phototherapy consisted of 6 focussed arrays each with 100 3-mm blue LED's. Peak wavelength was 459nm with a half spectral width of 22nm. Unit was placed 50cm above the baby, to achieve an irradiance of 5-6microW/cm^2/nm. Blue-Green LED phototherapy consisted of 6	ET: Group 1: 0/57 Group 2: 0/25 Group 3: 0/22 Erythema: Group 1: 0/57 Group 2: 0/25 Group 3: 0/22	Mean duration of phototherapy Group 1: 35.4 + 20.2 hours Group 2: 31.6 + 19.6 hours Group 3: 39.2 + 25.5 hours Mean change in TSB: Group 1: -44 + 33 micromol/L Group 2: -39 + 46 micromol/L Group 3: -41 + 48 micromol/L

			focussed arrays each with 100 3-mm blue-green LED's. Peak wavelength was 505nm with a half spectral width of 38nm. Unit was placed 50cm above the baby, to achieve an irradiance of 5-6microW/cm^2/nm. All babies were placed in open cribs and were naked except for diapers and eye coverings.		
Author: Martins B Year: 2007 Country: Brazil ID: [151]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1$^-$	N: 88 Inclusion: Need for phototherapy according to birthweight Exclusion: Direct bilirubin >34 micromol/L Haemolytic jaundice, Ecchymosis, Malformations, Congenital infection Demographics:	Group 1: Conventional Phototherapy Group 2: LED phototherapy Conventional phototherapy consisted of a single quartz-halogen lamp, with a dichroic reflector, positioned 50cm from the baby and illuminating a circle of 18cm diameter. Mean irradiance was 21 $\pm$ 6microW/cm^2/nm LED phototherapy consisted of the Super LED system positioned 30cm from the patient and illuminating an elliptical area of 38cm x 27cm diameter.	ET: Group 1: 0/44 Group 2: 0/44 Erythema: Group 1: 0/44 Group 2: 0/44 Treatment failure: Group 1: 0/44 Group 2: 0/44	Mean duration of phototherapy Group 1: 63.8 $\pm$ 37 hours Group 2: 36.8 $\pm$ 21 hours TSB levels – change 24 hours Group 1: -22 $\pm$ 25 micromol/L Group 2: -50 $\pm$ 26 micromol/L

		Gender (M/F):58/30 Mean GA: 33.6 + 1.9 weeks Mean BW: 1998 + 541 gms Age at entry to study 68.1 + 25.5 hours Mean TSB: 179 + 38 micromol/L	Mean irradiance was 37 + 9microW/cm^2/nm Phototherapy discontinued when TSB levels decreased 30% from original levels Treatment was considered to have failed if TSB continued to rise and reached a level 30% below TSB levels required for exchange transfusion.		
Author: Ebbesen F Year: 2007 Country: Denmark ID: [153]	Methodology: RCT Blinding: Not reported Randomisation: Not stated but sealed envelopes used Evidence level: 1$^+$	N: 141 Inclusion: Preterm infants (28 – 36.6 weeks), Age > 24 hours, No previous phototherapy, Non-haemolytic hyperbilirubinaemia Exclusion: Not reported Demographics:	Group 1: Blue phototherapy Group 2: Turquoise phototherapy Treatment duration was fixed (24 hours) Phototherapy consisted of either 8 blue fluorescent lamps (20 W, 60 x 3.7cm) 41 cm above the baby or 8 turquoise fluorescent lamps (18 W, 60 x 2.6cm) 41 cm above the baby. Distance from baby was different to ensure irradiance was identical in both groups	ET: Group 1: 0/69 Group 2: 0/72	Mean change in TSB: Group 1: -78 + 31 micromol/L Group 2: -92 + 31 micromol/L

		Gender (M/F): 80/61 Mean GA: 33.8 + 2.49 weeks Mean BW: 2078 + 605 gms Age at entry to study 74.0 + 31.9 hours Mean TSB: 221 + 60 micromol/L	Phototherapy was continuous with breaks for feeding etc Babies were naked except for eye patches and diapers		
Author: Ebbesen F Year: 2003 Country: Denmark ID: [154]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1^-	N: 85 Inclusion: Preterm infants (28 – 36.8 weeks), Age > 24 hours, Non-haemolytic hyperbilirubinaemia Exclusion: Not reported Demographics: Gender (M/F): 49/36 Mean GA: Not reported Mean BW: Not reported	Group 1: Blue phototherapy Group 2: Turquoise phototherapy Treatment duration was fixed (48 hours) Phototherapy consisted of either 6 blue + 2 daylight fluorescent lamps 32 cm above the baby or 6 turquoise + 2 daylight fluorescent lamps 32 cm above the baby. Irradiance for turquoise lamps was 2.72 + 0.25 mW/cm^2 Irradiance for blue lamps was 3.52 + 0.33		:

		Age at entry to study Not reported Mean TSB: Not reported	mW/cm^2 Irradiance for white lamps was 0.56 ± 0.07 mW/cm^2 Phototherapy was continuous with breaks for feeding etc Babies were naked except for eye patches and diapers		
Author: Ayyash H Year: 1987 Country: Greece ID: [155]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level:	Study 1: Full-term N: 200 Inclusion: Idiopathic jaundice Exclusion: Haemolytic jaundice Demographics:	Group 1: Blue Phototherapy Group 2: Green Phototherapy Phototherapy consisted of 5, either green or blue, fluorescent tubes mounted on a conventional phototherapy unit.		**Study 1 – Full-term** Mean duration of phototherapy Group 1: 49.88 ± 3.02 hours Group 2: 42.68 ± 2.74 hours Mean change in TSB: Group 1: -39 ± 2 micromol/L Group 2: -43± 2 micromol/L **Study 2 – Pre-term** Mean duration of phototherapy

	1⁻	Gender (M/F): Not reported Mean GA: 38.9 + 0.14 weeks Mean BW: 3394 + 43 gms Age at entry to study 101.8 + 4.32 hours Mean TSB: 286 + 60 micromol/L Study 2: Pre-term N: 62 Inclusion: Idiopathic jaundice Exclusion: Haemolytic jaundice Demographics: Gender (M/F): Not reported Mean GA: 34.6 + 0.36 weeks			Group 1: 53.29 + 5.9 hours Group 2: 53.26 + 5.52 hours Mean change in TSB: Group 1: -34 + 6 micromol/L Group 2: -38 + 8 micromol/L

		Mean BW: 2361 + 102 gms Age at entry to study 85.6 + 5.52 hours Mean TSB: 239 + 16 micromol/L			
Author: Amato M Year: 1991 Country: Switzerland ID: [156]	Methodology: RCT Blinding: Not reported Randomisation: Random-numbers table Evidence level: 1^+	N: 30 Inclusion: Idiopathic hyperbilirubinaemia TSB > 250 micromol/L Exclusion: Perinatal asphyxia, Apgar < 4 at 1 minute and <6 at 5 minutes, Signs of haemolytic disease, secondary hyperbilirubinaemia Demographics: Gender (M/F): 13/17 Mean GA: 39.0 + 1.03 weeks Mean BW: 3395 + 547 gms Age at entry to study	Group 1: Blue Phototherapy Group 2: Green Phototherapy Phototherapy consisted of either blue or green fluorescent tubes 30cm above the mattress. The baby was placed naked, except for eye patches and gonadal protection, on a Plexiglas surface. Light spectral range of green tubes was 350-650 nm and 300-600 for the blue tubes Babies were supplemented with 5% glucose (15mg/kg per day) Phototherapy discontinued at TSB < 200 micromol/L	ET: Group 1: 0/15 Group 2: 0/15 Rebound jaundice: Group 1: 12/15 Group 2: 3/15	Mean duration of phototherapy Group 1: 34 + 10 hours Group 2: 70 + 23 hours Mean change in TSB: Group 1: -157 + 22 micromol/L Group 2: -154 + 31 micromol/L

		70.5 ± 23,1 hours Mean TSB: 291± 35 micromol/L	Rebound jaundice was a rise of 17 micromol/L after phototherapy discontinuation		
Author: Vecchi C Year: 1986 Country: Italy ID: [157]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1^-	N: 84 Inclusion: Hyperbilirubinaemia Exclusion: Blood group incompatibility, Haemolytic disease, Respiratory distress, Sepsis Demographics: Gender (M/F): Not reported Mean GA: 35 weeks Mean BW: 1930 gms Age at entry to study Not reported Mean TSB: 227 ± 40 micromol/L	Group 1: Blue Phototherapy Group 2: Green Phototherapy Phototherapy units consisted of 8 (blue or green) fluorescent tubes positioned 46 cm above the mattress. The total power irradiance reaching the baby through two plastic shields was 2.3 mW/cm^2 for green phototherapy and 3.2 mW/cm^2 for blue phototherapy Phototherapy was continuous except for feeding etc Babies were placed in an incubator		TSB levels – change 24 hours: Group 1: -50 ± 23 micromol/L Group 2: -48 ± 26 micromol/L

Author: Sisson T Year: 1972 Country: USA ID: [158]	Methodology: RCT Blinding: Not reported Randomisation: Random numbers Evidence level: 1^-	N: 72 Inclusion: TSB $\geq$ 150 micromol/L Exclusion: Sepsis, Respiratory distress, Blood group incompatibility, Haemolytic disease Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: 2097 gms Age at entry to study Not reported Mean TSB: 190 micromol/L	Group 1: Blue Phototherapy Group 2: Special Blue phototherapy Group 3: White phototherapy Each phototherapy unit consisted of 10 fluorescent tubes. Irradiance for blue lamps was 0.91 mW/cm^2 Irradiance for special blue lamps was 2.9 mW/cm^2 Irradiance for white lamps was 0.32 mW/cm^2 Babies wore eye patches Phototherapy was continuous except for breaks for feeding etc Phototherapy discontinued at a steady rate and	Incomplete data for all outcomes	Mean duration of phototherapy Group 1: 46 $\pm$ 15.7 hours Group 2: 40 $\pm$ 18.3 hours Group 3: 75 $\pm$ 29.4 hours

			reached TSB < 137 micromol/L		
Author: Shinwell E Year: 2002 Country: Israel ID: [159]	Methodology: RCT Blinding: Not reported Randomisation: Not reported but sealed, opaque envelopes used Evidence level: 1^{+}	N: 32 Inclusion: Full-term, Birthweight > 2500gms, TSB > 308 micromol/L Exclusion: Congenital malformation Demographics: Gender (M/F): 8/22 Mean GA: 38 + 1 weeks Mean BW: 3500 + 478 gms Age at entry to study 104.2 + 33.7 hours Mean TSB: 320 + 17 micromol/L	Group 1: Supine position Group 2: Changing positions All babies received identical phototherapy for periods of 150 minutes followed by 30 minute breaks for feeding and routine nursing care. Babies in changing position group were alternated between supine and prone Phototherapy discontinued after two consecutive measurements TSB < 239 micromol/L	ET: Group 1: 0/16 Group 2: 1/16 Rebound jaundice: Not reported Treatment failure: Group 1: 0/16 Group 2: 1/16	Mean duration of phototherapy Group 1: 28 + 9 hours Group 2: 40 + 15 hours Mean change in TSB: Group 1: -114 + 23 micromol/L Group 2: -108 + 11 micromol/L
Author: Chen C	Methodology: RCT	N: 51 Inclusion:	Group 1: Supine position		Mean duration of phototherapy Group 1: 53.3 + 17.9 hours Group 2: 52.8 + 20.2 hours

Year: 2002 Country: Taiwan ID: [160]	Blinding: Not reported Randomisation: Not reported but sealed envelopes used. Evidence level: 1^+	TSB > 256 micromol/L, Absence of blood group incompatibility, Normal G-6-PD status, Haemoglobin > 14g/dl Exclusion: Congenital anomalies, Significant bruising, Large cephalhematoma Demographics: Gender (M/F): 19/32 Mean GA: 38.2 $\pm$ 1.14 weeks Mean BW:3137 $\pm$ 384 gms Age at entry to study 143.4 $\pm$ 48.5 hours Mean TSB: Not reported	Group 2: Changing position Phototherapy initiated at TSB $\geq$ 256 micromol/L and discontinued at TSB $\leq$ 171 micromol/L Babies in changing position group were alternated between supine and prone every 120 minutes		Mean change in TSB: Group 1: -128 $\pm$ 54 micromol/L Group 2: -126 $\pm$ 45 micromol/L
Author: Mohammadzadeh A Year:	Methodology: RCT	N: 50 Inclusion:	Group 1: Supine position		Mean change in TSB: Group 1: -68 $\pm$ 27 micromol/L Group 2: -62 $\pm$ 21 micromol/L

2004 Country: Iran ID: [161]	Blinding: Not reported Randomisation: Not reported Evidence level: 1⁻	TSB $\geq$ 256 micromol/L (49-72 hours) TSB $\geq$ 291 micromol/L (>72 hours) Exclusion: Haemolytic disease, Congenital anomalies, Cephalhaematoma, Metabolic disease Demographics: Gender (M/F) : Not reported Mean GA: Not reported Mean BW: Not reported Age at entry to study Not reported Mean TSB: 321 $\pm$ 39 micromol/L	Group 2: Changing position All babies received identical phototherapy for periods of 150 minutes followed by 30 minute breaks for feeding and routine nursing care. Babies in changing position group were alternated between supine and prone Phototherapy discontinued after two consecutive measurements TSB < 239 micromol/L		
Author: Lau S Year: 1984	Methodology: RCT Blinding: Not reported	N: 34 Inclusion: Full-term,	Group 1: Continuous Phototherapy Group 2: Intermittent Phototherapy – 4 hours on - 4		Mean duration of phototherapy Group 1: 89.9 $\pm$ 54.2 hours Group 2: 86.7 $\pm$ 28.9 hours Group 3: 100.0 $\pm$ 61.0 hours

Country: Hong Kong ID: [162]	Randomisation: Not reported Evidence level: 1-	Birthweight > 2500gms, TSB between 190 – 205 micromol/L Exclusion: Jaundice with known causes Demographics: Gender (M/F): Not reported Mean GA: 39.9 ± 1.5 weeks Mean BW: 3229 ± 394 gms Age at entry to study Not reported Mean TSB: 198 ± 25 micromol/L	hours off Group 3: Intermittent Phototherapy – 1 hour on - 3 hours off Phototherapy was discontinued when TSB < 171 micromol/L		
Author: Vogl T Year: 1978 Country: USA	Methodology: RCT Blinding: Not reported Randomisation: Not reported	N: 76 Inclusion: Birthweight between 1200 and 2400gms, TSB > 137 micromol/L	Group 1: Continuous Phototherapy Group 2: Intermittent Phototherapy – 15 minutes on – 15 minutes off Group 3: Intermittent Phototherapy – 15 minutes on –		Mean duration of phototherapy Group 1: 64 ± 50 hours Group 2: 57 ± 45 hours Group 3: 79 ± 40 hours Group 4: 80 ± 50 hours

ID: [163]	Evidence level: 1-	Exclusion: Haemolytic anaemia, Positive Coombs tests, Respiratory distress syndrome Demographics: Gender (M/F) : Mean GA: 34.7 + 2.0 weeks Mean BW: 1836 + 299 gms Age at entry to study 56.8 + 10.8 hours Mean TSB: 150 + 19 micromol/L	30 minutes off Group 4: Intermittent Phototherapy – 15 minutes on – 60 minutes off Therapy was discontinued when TSB < 137 micromol/L on two successive occasions		
Author: Fok T Year: 1995 Country: Hong Kong	Methodology: RCT Blinding: Not reported Randomisation: Computer generated random numbers	N: 203 Inclusion: Gestational age > 35 weeks, Birthweight > 2300 gms, Exclusion: Other systemic illness,	Group 1: Eye patches Group 2: Head box Eye patches were obtained commercially, were removed during feeding and were replaced daily	Prurient eye discharge Group 1: 23/102 Group 2: 9/101 Features of Conjunctivitis Group 1: 13/102 Group 2: 2/101	Mean duration of phototherapy Group 1: 67.2 + 33.6 hours Group 2: 64.5 + 26.6 hours HC Professional satisfaction: 76 (70.4%) of nurse preferred the head box while 17 (15.7%) preferred the eye patches.

ID: [164]	Evidence level: 1^+	Eye infection, Haemolysis, Treatment with antibiotics, History of infection, Demographics: Gender (M/F): 106/97 Mean GA: 38.6 ± 2.56 weeks Mean BW: 3087 ± 611 gms Age at entry to study 89.5 ± 27.6 hours Mean TSB: 258 ± 27 micromol/L	Head box consisted of an opaque plastic box (20 x 20 x 16cm). Holes were used for ventilation.		
Author: Paludetto R Year: 1985 Country: Italy ID: [166]	Methodology: RCT Blinding: Not reported Randomisation: Not reported	N: 38 Inclusion: Healthy normal labour and delivery, Single birth, No congenital malformation, Apgar > 7 at 5 minutes, Birthweight > 2500 gms,	Group 1: Eye patches Group 2: Screen Screen consisted of an opaque fabric suspended from the head end of the bassinet with ribbons attached to both upper sides of the crib so that the head is covered and the		Mean duration of phototherapy Group 1: 23.9 hours Group 2: 22.6 hours

	Evidence level: 1^-	Full-term, Breast –feeding, No perinatal complications Exclusion: Babies in Special Care Unit, Haemolytic disease, Hypocalcaemia, Polycythemia Demographics: Gender (M/F): 24/14 Mean GA: 39 weeks Mean BW: 3395 gms Age at entry to study 66.5 hours Mean TSB 232 micromol/L	fabric falls freely upon the shoulders and neck of the baby. Two other ribbons tied to the lower part of the fabric are attached with adhesive tape behind the neck in a way that the bay is free to move and the fabric does not create any tension in the neck.		
Author: Wu P Year:	Methodology: RCT Blinding:	N: 120 Inclusion:	Group 1: No treatment Group 2:	ET: Group 1: 0/40 Group 2: 0/40 Group 3: 0/40	Max TSB: Group 1: 161 $\pm$ 51 micromol/L Group 2: 115 $\pm$ 34 micromol/L Group 3: 134 $\pm$ 32 micromol/L

1974 Country: USA ID: [141]	Not reported Randomisation: Randomised cards Evidence level: 1^-	Pre-term babies with birthweight between 1250 and 2000 grams Exclusion: Gross congenital anomalies, Haemolytic anaemias, Severe respiratory distress syndrome Demographics: Gender (M/F): 59/61 Mean GA: 34.0 ± 2.5 weeks Mean BW: 1736 ± 199 grams Mean age at entry to study: Not reported Mean TSB: Not reported	Phototherapy - continuous Group 3: Phototherapy – Intermittent Babies in phototherapy group received 5 days of phototherapy while in incubators Phototherapy consisted of 10 20w cool-white fluorescent lamps suspended 45cm above the baby. Average irradiance during day was 0.05microW/cm^2/nm and at night was 0.01microW/cm^2/nm in the 400 – 500 nm wave band.	Mortality: Group 1: 2/40 Group 2: 2/40 Group 3: 0/40	
Author: Curtis-Cohen M Year: 1985 Country:	Methodology: RCT Blinding: Not reported Randomisation:	N: 22 Inclusion: Pre-term babies Exclusion:	Group 1: Early Phototherapy Group 2: Delayed start of treatment – Phototherapy started at TsB >85.5micromol/L Phototherapy consisted of a broad spectrum white light from a tungsten-halogen lamp in a	ET: Group 1: 0/11 Group 2: 0/11 Mortality: Group 1: 0/11 Group 2: 0/11	Max TSB: Group 1: 112 ± 27 micromol/L Group 2: 123 ± 20 micromol/L

USA ID: [142]	Not reported Evidence level: 1⁻	Haemolytic disease, Direct hyperbilirubinaemia, sepsis Demographics: Gender (M/F) : Not reported Mean GA: 27.4 ± 1.4 weeks Mean BW: 858 ± 214 grams Mean age at entry to study: Not reported Mean TSB: Not reported	Model 1400 phototherapy unit. Irradiance was maintained at 12microW/cm^2/nm at 450nm		
Author: Leite M Year: 2004 Country: Brazil ID: [143]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level:	N: 81 Inclusion: Birthweight <2000 grams Exclusion: Haemolysis, G-6-PD deficiency, Malformations,	Group 1: Early Phototherapy Group 2: Phototherapy at TsB ≥ 136.8micromol/L Phototherapy discontinued at TsB ≤ 85.5micromol/L Phototherapy consisted of fanem Mod 007 units equipped with 7 Philips fluorescent lamps	ET: Group 1: 0/35 Group 2: 0/35	Max TSB: Group 1: 113 ± 49 micromol/L Group 2: 147 + 36 micromol/L

	1-	Intestinal obstructions, Cholestasis, congenital infections, Maternal or neonatal use of Phenobarbital, TCB > 256.5micromol/L Demographics: Gender (M/F) : 37/33 Mean GA: Not reported Mean BW: Not reported Mean age at entry to study: Not reported Mean TSB: Not reported	(special blue), 400 – 540 nm Average irradiance was 14.4microW/cm^2/nm		
Author: Maurer H Year: 1973 Country: USA	Methodology: RCT Blinding: Not reported Randomisation: Not reported	N: 69 Inclusion: Birthweight <2500 grams Exclusion: Positive Coombs test, Potential ABO incompatibility,	Group 1: Agar – 125mg in first 4ml of formula beginning at 18 hours and continued at 3 hourly intervals for 4 days Group 2: Early phototherapy – Intermittent – 12 hours daily for 4 days Group 3: Early phototherapy – Continuous – 24 hours		Max TSB: Group 1: 118 ± 40 micromol/L Group 2: 108 + 36 micromol/L Group 3: 60 ± 42 micromol/L Group 4: 147 ± 57 micromol/L

ID: [140]	Evidence level: 1-	sepsis Demographics: Gender (M/F) : 39/30 Mean GA: 34.2 + 3.8 weeks Mean BW: 1860 + 344 grams Age at entry to study: <24 hours Mean TSB: Not reported	daily for 4 days Group 4: No treatment Phototherapy consisted of 8 blue fluorescent lamps (200 – 300 foot candles) 40 cm above the baby		
Author: Wananukul S Year: 2002 Country: Thailand ID: [180]	Methodology: RCT Blinding: Not reported Randomisation: Nor reported Evidence level: 1-	N: 40 Inclusion: Preterm babies requiring phototherapy for hyperbilirubinaemia Exclusion: Skin disease, Respiratory distress Demographics:	Group 1: Clear topical ointment 3.0 ml (Vaseline:liquid paraffin = 1:1) Group 2: No ointment All babies were placed in incubators. Ointment was applied to the whole body, measurements taken from upper arms, back and legs. Evaporation rate was measured by a method		TEWL – at 5 hours Group 1: 7.5 + 1.5 $g/m^2/h$ Group 2: 8.9 + 1.6 $g/m^2/h$

		Gender (M/F) : 22/18 Mean GA: 33.1 ± 2.6 weeks Mean BW: 1444 ± 196 grams Mean age at entry to study: Not reported Mean TSB: 171 ± 39 micromol/L	based on the determination of the water vapour pressure gradient in the air layer closed to the skin surface. (Tewameter TM 210)		
Author: Eggert P Year: 1988 Country: Germany ID: [168]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1^-	N: 101 Inclusion: Uncomplicated hyperbilirubinaemia Exclusion: Age < 40 hours with ABO or Rh incompatibility, Babies who received antibiotics Demographics: Gender (M/F): 62/39 Median GA: 40 weeks Mean BW: Not reported Mean age at entry to study: Not	Group 1: Conventional Phototherapy Group 2: Conventional Phototherapy + white curtains Group 3: Halide Phototherapy All babies were treated in intensive care incubators. Conventional phototherapy consisted of a Drager 76 unit equipped with 6 blue standard fluorescent lights (light range 410 – 520 nm) In the second group the four outer walls of the		Mean change in TsB (24 hours) Group 1: -56 ± 26 micromol/L Group 2: -80 ± 27 micromol/L Group 3: -55 ± 22 micromol/L

		reported Mean TSB: 243 + 28 micromol/L	incubator were draped in white cloth The halide phototherapy consisted of a Drager 8000 halide lamp (light range 400 – 580 nm) All phototherapy units were 34cm above the mattress. Babies were naked except for a bikini diaper and blindfolds and were their position was changed every 4 hours. Phototherapy could be interrupted for nursing care and feedings. Babies received oral feedings of either mother's milk or adapted formula and dextrose solution.		
Author: Djokomuljanto S Year: 2006 Country: Malaysia	Methodology: RCT Blinding: Investigators blinded to allocation Randomisation:	N: 100 Inclusion: Term babies with uncomplicated jaundice requiring phototherapy Exclusion: TsB approaching criteria for exchange	Group 1: Conventional phototherapy Group 2: Conventional phototherapy + white curtains Conventional phototherapy consisted of Phoenix Medical Systems unit of 6 compact blue fluorescent lamps 45 cm above the baby.		Mean change in TsB (4 hours) Group 1: -4 + 24 micromol/L Group 2: -28 + 25 micromol/L

ID: [167]	Block randomisation Evidence level: 1^+	transfusion Demographics: Gender (M/F): 56/44 Mean GA: Not reported Mean BW: Not reported Mean age at entry to study: 105 $\pm$ 35 hours Mean TSB: 264 $\pm$ 59 micromol/L	Curtains were hung on both sides if the phototherapy unit.		
Author: Sivanandan S Year: 2009 Country: India ID: [169]	Methodology: RCT Blinding: Not reported Randomisation: Not reported but sealed opaque envelopes use Evidence level: 1^+	N: 84 Inclusion: Term babies with non-haemolytic jaundice on a postnatal ward of a tertiary level neonatal unit Age $\geq$ 24 hours and $\leq$ 20 days, 5 minute Apgar > 6, TSB < 359 micromol/L Exclusion: Hyperbilirubinaemia requiring	Group 1: Conventional phototherapy Group 2: Conventional phototherapy + white curtains Conventional phototherapy consisted of Phoenix Medical Systems unit of 4 blue and 2 white compact fluorescent lamps 45 cm above the baby. Light range was425 – 475 nm White plastic sheets could be attached to the	Phototherapy failure Group 1: 52 Group 2: 4/42 ET: Group 1: 0/10 Group 2: 0/10 Mortality: Group 1: 0/10 Group 2: 0/10	Mean change in TsB (24 hours) Group 1: -34 $\pm$ 63 micromol/L Group 2: -39 $\pm$ 56 micromol/L Mean duration of phototherapy Group 1: 24.9 $\pm$ 15.4 hours Group 2: 23.3 $\pm$ 12.9 hours

		exchange transfusion, Rh haemolysis, G-6-PD deficiency, Evidence of haemolysis, Positive Coombs' test, Major congenital malformation, Culture-positive sepsis, Need of intensive care Demographics: Gender (M/F): 47/35 Mean GA: 37.5 + 1.3 weeks Mean BW: 2856 + 345 grams Mean age at entry to study: 69 + 36 hours Mean TSB: 280 + 39 micromol/L	sides of the unit Treatment failure was defined as TSB > 342 micromol/L Phototherapy was discontinued if If started after 72 hours of age after two consecutive TSB < 256 micromol/L If started before 72 hours of age after two consecutive were less than age-specific threshold for phototherapy TSB was measured for rebound after 8 hours		
Author: Grunhagen D Year: 2002	Methodology: Case series Blinding: None	N: 18 Inclusion: Pre-term with non-haemolytic hyperbilirubinaemia	All babies received phototherapy which consisted of a single quartz spotlight (Bililight Ohmeda) 55 cm above the baby. The irradiance was 12.5microW/cm^2/nm. Light range was 420 – 480 nm. TEWL was measured with a Tewameter TM210 (YSI Inc) and measurements taken on chest or		Mean change in TEWL 2.9 + 3.9 g/m^2/h TEWL retuned to pre-phototherapy levels within 1 hour of discontinuation of phototherapy

Country: Netherlands ID: [179]	Randomisation: None Evidence level: 3	Exclusion: None Demographics: Gender (M/F): / Mean GA: 30.6 ± 1.6 weeks Mean BW: 1412 ± 256 grams Mean age at entry to study: 120 ± 72 hours Mean TSB: Not reported	back of the baby. TEWL was measured when hyperbilirubinaemia was diagnosed and 60 minutes after initiation of phototherapy.		
Author: Wananukul S Year: 2001 Country: Thailand ID: [177]	Methodology: Comparative study Blinding: None Randomisation: None Evidence level:	N: 80 (40 with hyperbilirubinaemia who received phototherapy and 40 healthy controls) Inclusion: Term babies Exclusion: None	Babies with hyperbilirubinaemia received conventional phototherapy in open cribs. Phototherapy consisted of 6 white and 2 blue fluorescent bulbs in a plexiglass-bottomed box 30cm above the baby. Irradiance was 10microW/cm^2/nm. TEWL was measured with a Tewameter TM 2/0 (Courage & Khazama) and measurements were taken at chest, interscapular and buttocks of the baby. Measurements were taken before phototherapy and repeated at 30 minutes and 6 hours during phototherapy.	ET: Group 1: Group 2: Mortality: Group 1: Group 2:	Mean change in TEWL PT: 1.2 ± 3.9 g/m^2/h Control: 0.2 ± 0.9 g/m^2/h TEWL retuned to pre-phototherapy levels within 1 hour of discontinuation of phototherapy

	2-	Demographics: Gender (M/F): 44/36 Mean GA: 39.0 ± 1.2 weeks Mean BW: 3166 ± 435 grams Mean age at entry to study: Not reported Mean TSB: Not reported			

Author: Maayan-Metzeger A Year: 2001 Country: Israel ID: [178]	Methodology: Case series Blinding: None Randomisation: None Evidence level: 3	N: 31 Inclusion: Preterm with hyperbilirubinaemia Exclusion: Respiratory distress, Sepsis, Need for ventilatory support Demographics: Gender (M/F): 15/16 Mean GA: 31.2 weeks Mean BW: 1447 grams Mean age at entry to study: 106 hours Mean TSB: Not reported	All babies were nursed naked, except for eye pads, in incubators and received phototherapy.. Conventional phototherapy consisted of (Air Shields Micro-Lite) Light range was 400 – 500 nm. TEWL was measured usinga combined Tewameter and corneometer (Courage and Khazka) TEWL was measure in seven body areas; forehead, upper back, cubital fossa, palms, abdomen, soles, and inguinal region. Measurement were taken before start of phototherapy and repeated during phototherapy (at least 4 and up to 24 hours)		Mean change in TEWL PT: 4.3 $\pm$ 4.7 g/m^2/h
Author: Rosenfeld W Year:	Methodology: RCT Blinding:	N: 74 Inclusion:	Group 1: Phototherapy Group 2:	Patent Ductus Arteriosus Group 1: 23/38 Group 2: 11/36	

1986 Country: USA ID: [183]	Not reported Randomisation: Randomisation chart Evidence level: 1^+	Pre-term babies with gestational age between 26 and 32 weeks Exclusion: None Demographics: Gender (M/F):Not reported Mean GA: 29.4 weeks Mean BW: 2034 grams Mean age at entry to study: Not reported Mean TSB: micromol/L	Phototherapy with Chest shields All babies were receiving early phototherapy to prevent hyperbilirubinaemia and were nursed under radiant warmers, receive mechanical ventilation for respiratory distress syndrome. Standard phototherapy units (Air Shields) were used Mean light intensity was 4.77microW/nm Chest shields were folded (doubled) piece of aluminium foil covered in a gauze pad and taped over the left chest.	Late mortality Group 1: 4/38 Group 2: 10/36	
Author: Tatli M Year: 2008 Country: Turkey	Methodology: Comparative study with healthy controls Blinding: None Randomisation: None	N: 47 (14 were healthy controls) Inclusion: Term babies with non-haemolytic hyperbilirubinaemia Exclusion: None	Phototherapy consisted of standard unit of 4 blue and 2 white fluorescent tubes (Air Shields) with a light range of 480 – 520 nm and an irradiance of 12microW/cm^2/nm. Phototherapy lasted 72 hours, babies whose TsB declined to normal levels before 72 hours were excluded.		Mean change in Lymphocyte-DNA damage PT: 29.1 $\pm$ 1.9 Control: 2.7 $\pm$ 2.9

ID: [172]	Evidence level: 2^-	Demographics: Gender (M/F):29/18 Mean GA: 39.3 ± 0.9 weeks Mean BW: 3021 ± 450 grams Mean age at entry to study: 113 ± 46 hours Mean TSB: Not reported			
Author: Berg P Year: 1997 Country: Sweden ID: [174]	Methodology: Retrospective matched case-control study Blinding: None Randomisation: None Evidence level: 2^-	N: 150 Inclusion: 30 cases of childhood cancer before 20 years of age and 120 controls Exclusion: None Demographics: Gender (M/F):Not reported Mean GA: Not reported Mean BW: Not reported		PT Cases: 0/30 Controls: 11/120	No increased risk of developing childhood malignant melanoma in skin of babies who received phototherapy

		Mean age at entry to study: Not reported Mean TSB: Not reported			
Author: Matichard E Year: 2006 Country: France ID: [176]	Methodology: Case control study Blinding: Not reported Randomisation: Not reported Evidence level: 2-	N: 58 Inclusion: Primary school children (age 8 – 9) Exclusion: Not reported Demographics: Gender (M/F) 30/28 Mean GA: N/A Mean BW: NA Mean age at entry to study: N/A Mean TSB: N/A	Collected information included, Phototype (Fitzpatrick's classification), Behaviour in the sun, Sun protection policy, History of phototherapy for neonatal jaundice A melanocytic nevus count was conducted by a dermatologistpy The size of nevi was recorded <2mm, 2-5mm, >5mm	Received phototherapy = 18 Controls = 40	Mean melanocytic coun (nevus > 2mm): Phototherapy 3.5 ± 3.03 Controls:1.45 ± 1.99
Author: Turan O	Methodology: RCT	N: 98			No significant correlation found between heart rate, systolic blood pressure, diastolic blood pressure and mean blood pressure and serum nitric oxide and vascular endothelial growth factor.

Year: 2004 Country: Turkey ID: [182]	Blinding: Not reported Randomisation: Not reported Evidence level: 1-	Inclusion: Term and pre-term babies receiving phototherapy for hyperbilirubinaemia Exclusion: Congenital malformations, Sepsis, babies receiving positive inotropic drugs Demographics: Gender (M/F):Not reported Mean GA: 36.7 $\pm$ 3.2 weeks Mean BW: 2880 $\pm$ 803 grams Mean age at entry to study: Not reported Mean TSB: Not reported			
Author: Speck W Year: 1979	Methodology: Review Blinding: Not reported	Review of in vivo studies of effects of phototherapy on cell DNA			

Country: USA ID: [171]	Randomisation: Not reported Evidence level: 1-				
Author: Weissman A Year: 2009 Country: Israel ID: [181]	Methodology: Before-after study Blinding: None Randomisation: None Evidence level: 3	N: 30 Inclusion: Jaundice GA = 37 – 42 weeks Apgar (1 min) > 7 Apgar (5 min) > 8 Exclusion: Haemolysis, G-6-PD, Fever, Maternal use of narcotic analgesic drugs during labour,	Phototherapy consisted of an overhead LED unit (neoBLUE) Irradiance was 34microW/cm^2/nm.		Heart Rate variability – SD1 Before: 12 ± 8 ms After : 8 ± 4ms P < 0.02 Heart Rate variability – SD2 Before: 33 ± 16 ms After : 22 ± 10 ms P < 0.01 Heart Rate variability – SDDN Before: 30 ± 14 ms After : 18 ± 7 ms P < 0.01

		Ruptured membranes > 18ours Demographics: Gender (M/F)16/14 Mean GA: 39.1 + 1.5 weeks Mean BW: 3116 + 392 grams Mean age at entry to study: 53 + 31 hours Mean TSB: 238 + 43 micromol/L			Heart Rate variability – RMSSD Before: 18 + 12 ms After : 11 + 6 ms P < 0.02
Author: Mahe E Year: 2009 Country: France ID: [175]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 2-	N: 828 Inclusion: Primary school children (age 8 – 9) Exclusion: Not reported Demographics: Gender (M/F) 415/413 Mean GA: N/A	Collected information included, Phototype (Fitzpatrick's classification), Behaviour in the sun, Sun protection policy, History of phototherapy for neonatal jaundice A melanocytic nevus count was conducted by trained nurses who was blind to whether the child had received phototherapy The size of exposed body parts (arm and back)was record <2mm, 2-5mm, >5mm	Received phototherapy = 180 Controls = 648	There was no difference in nevus counts as a function of exposure to neonatal phototherapy. Mean melanocytic count: Phototherapy 16.8 + 9.8 Controls:16.7 + 10.5

		Mean BW: NA Mean age at entry to study: N/A Mean TSB: N/A			
<u>Author</u>: Aylcek A <u>Year</u>: 2008 <u>Country</u>: Turkey <u>ID</u>: [173]	<u>Methodology</u>: Case control study <u>Blinding</u>: Not reported <u>Randomisation</u>: Not reported <u>Evidence level</u>: 2^-	<u>N</u>: 65 <u>Inclusion</u>: Indirect hyperbilirubinaemia TSB > 222 micromol/L <u>Exclusion</u>: Severe congenital malformation, Prematurity or postmaturity, Maternal diabetes, Birth asphyxia, Sepsis, Haemolysis due to ABO/Rh incompatibility, Phototherapy before blood was collected, Bilirubin rising by more than 85 micromol./L day in first 24 hour, Tsb > 410 micromol/L	Group 1: Intensive phototherapy Group 2: Conventional phototherapy Group 3: No phototherapy Phototherapy consisted of six white fluorescent tubes 40cm above the baby. 12-16 microW/cm^2/nm. Intensive phototehrpay consisted of 12 white fluorescent tubes 20cm above and below the baby. 30-34 microW/cm^2/nm. DNA damage was measured in blood samples taken after phototherapy. The images of 100 randomly selected nuclei (50 from each of two replicate slides) were analysed visually.		<u>Mean duration of phototherapy</u>: Group 1: 54 $\pm$ 6 hours Group 2: 61 $\pm$ 10 hours Group 3: N/A <u>DNA damage (arbitrary units)</u>: Group 1: 32 $\pm$ 9 Group 2: 28 $\pm$ 9 Group 3: 21 $\pm$ 10 P < 0.001

		Demographics: Gender (M/F) 35/28 Mean GA: Not reported Mean BW: Not reported Mean age at entry to study: Not reported Mean TSB: Not reported			

Is it beneficial to give additional fluids (cup feeds, fluids) during treatment with phototherapy?

Bibliographic Information	**Study Type & Evidence Level**	**Number of Patients/ Characteristics**	**Intervention & Comparison**	**Dichotomous outcomes (E:C)**	**Continuous Outcomes** **(Mean:SD: N)**	**Comments**
Author: Tontisirin K Year: 1989 Country: Thailand ID: 190	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1^{-}	N: 25 Inclusion: Hyperbilirubinaemia TSB $\geq$ 256.5 micromol/L Exclusion: Not reported Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: 3185 $\pm$ 288 gms Age at entry to study: 95 $\pm$ 17.7 hours Mean TSB: Not reported	Group 1: Formula feed – *Enfamil (Energy = 20 kcal/oz, contains 1.5 g/dl protein, 3.7 g/dl fat, 7 g/dl carbohydrate, mineral 0.34 g/dl, water 87.4 g/dl)* Group 2: Lactose-free Formula feed - *Prosobee(Energy = 20 kcal/oz, contains 2 g/dl protein, 3.6 g/dl fat, 6.6 g/dl carbohydrate, mineral 0.3 g/dl, water 87.4 g/dl)* Babies were fed ad libitum with formula (3 ounces) 8 times/day.		Mean decrease in TsB: Group 1: -97 $\pm$ 41 micromol/L Group 2: -92 $\pm$ 46 micromol/L Weight gain/loss: Group 1: 33 $\pm$ 65 gms Group 2: -7 $\pm$ 55 gms	

Author: Mehta S Year: 2005 Country: India ID: [188]	Methodology: RCT Blinding: Not reported Randomisation: Stratified block randomisation (based on TsB levels) using sealed opaque envelopes Evidence level: 1^{++}	N: 74 Inclusion: Hyperbilirubinaemia TsB > 308 micromol/L Exclusion: TsB > 427 micromol/L, Kernicterus, Evidence of hemolysis, Signs of dehydration, Major congenital malformations, Babies on IV fluids Demographics: Gender (M/F): 52/22 Mean GA: 37.6 ± 0.9 weeks Mean BW: 2936 ± 473 gms Age at entry to study	Group 1: Phototherapy + Usual feeds Group 2: Phototherapy + Usual Feeds + Extra fluids Extra fluids consisted of IV fluid supplementation with N/5 saline in 5% dextrose for a period of 8 hours before phototherapy. After babies were offered 30mL/kg/day of extra oral feeds (expressed breast milk or formula) until phototherapy discontinued Phototherapy was discontinued when two TsB values obtain 12 hours apart were < 256 micromol/L Exchange transfusion was done if at 4 hours into the study TsB increased by > 34 micromol/L or if at 8 hours TsB remained > 342 micromol/L	Exchange Transfusions Group 1: 20/37 Group 2: 6/37	Mean decrease in TsB (24 hours): Group 1: -69 ± 28 micromol/L N = 17 Group 2: -95 ± 22 micromol/L N = 31 Mean duration of treatment: Group 1: 73 ± 31 hours Group 2: 52 ± 18 hours	

		130 ± 31 hours Mean TSB: 350 ± 31micromol/L				
Author: Boo N Year: 2002 Country: Malaysia ID: [189]	Methodology: RCT Blinding: Not reported Randomisation: Stratified randomisation (type of feed, hydration status, and TsB levels) using sealed envelopes Evidence level: 1^{+}	N: 54 Inclusion: TsB > 300 micromol/L with conjugated bilirubin ≤15% of TsB Exclusion: Sick babies, Major congenital malformations, Conjugated hyperbilirubinaemia, prolonged jaundice Demographics: Gender (M/F): 28/26 Mean GA: 39.4 ± 0.9 weeks Mean BW: 3075 ± 429 gms	Group 1: Phototherapy + Enteral feeds alone Group 2: Phototherapy + 50 % Enteral feeds + 50 % Intravenous feeds All babies received a daily maintenance fluid level of 90 mL/kg on day 2, 1290 mL/kg on day 3 and 150 mL/kg from day 4 onwards. They were also given an additional 10% of their respective total daily fluid requirement to compensate for the fluid loss. Enteral feeds group Formula-fed babies were given 8 divided feeds at 3 hour intervals. Breast-fed babies were breast-fed on demand. In addition they were given half of the calculated volume of formula feeds given to the formula fed babies. Enteral + Intravenous group Formula fed babies were given half of their	Exchange Transfusions Group 1: 5/27 Group 2: 8/27 Mortality Group 1: 0/27 Group 2: 0/27	Mean decrease in TsB (4 hours): Group 1: -37 ± 44 micromol/L Group 2: -43 ± 37 micromol/L	

		Age at entry to study: 139 + 47 hours Mean TSB: 377 + 66 micromol/L	24hour fluid requirement at eight divided feeds at 3hour intervals. The remaining half of their daily fluid requirement was given as continuous intravenous1/5 normal saline and 5% dextrose infusion via a peripheral vein over 24 hours. Breastfed babies were breast-fed on demand. Half of their daily fluid requirement was given as continuous intravenous1/5 normal saline and 5% dextrose infusion via a peripheral vein over 24 hours.			
Author: Martinez J Year: 1993 Country: Argentina ID: [126]	Methodology: RCT Blinding: Not reported Randomisation: Computer-generated Evidence level: 1^{+}	N: 125 Inclusion: TSB >291micromol/L Exclusion: Congenital anomalies Neonatal complications Birthweight below 10^{th} percentile or above 90^{th} percentile Venous hematocrit >65% Significant bruising Large cephalhematoma Haemolytic disease	Group 1: Continue breastfeeding Group 2: Discontinue breastfeeding, substitute formula feeds Group 3: Discontinue breastfeeding, substitute formula feeds, add Conventional phototherapy Group 4: Continue breastfeeding, add Conventional Phototherapy	ET: Group 1: 0/25 Group 2: 0/26 Group 3: 0/38 Group 4: 0/36 Treatment failure: Group 1: 6/25 Group 2: 5/26 Group 3: 1/38 Group 4: 5/36	Mean decrease in TsB (48 hours): Group 3: -77 + 41 micromol/L Group 4: -65 + 34 micromol/L	Only data from groups 3 and 4 used

		Demographics: Gender (M/F):70/55 Mean GA: 39.2 + 0.9 weeks Mean BW: 3404 + 361gms Age at entry to study: Not reported Mean TSB: 306 + 12 micromol/L	Conventional Phototherapy consisted of Quartz halide spot unit Irradiance = 10µW/cm^2 Light band = 400 – 480 nm Babies were naked with eyes patched in a bassinette Phototherapy discontinued at TSB < 231 micromol/L			

How to monitor a baby with jaundice?

When to discharge a baby treated for hyperbilirubinaemia? What follow-up is required?

Author: Kaplan M Year: 2005 Country: Israel ID: [185]	Study Type: Clinical study Evidence Level: 3	Diagnosis Hyperbilirubinaemia Criteria: Need for phototherapy: according to AAP 1997 Setting Medical Center Demographics: Sample size: 226 Gender (M/F): 134/92 Mean GA: 39 ± 2 weeks	Phototherapy criteria <24 hours 170 micromol/L 24-38 hours 205 micromol/L 48-72 hours 256 micromol/L >72 hours 291-308 micromol/L Babies with risk factors at 17 – 34 micromol/L below these levels For readmitted babies TsB ≥308 – 342 micromol/L Bilirubin routinely measured every 12 hours (checked more if clinical need) Phototherapy discontinued at 205 micromol/L	**Primary phototherapy** Mean TsB at onset: 251 ± 53 micromol/L Age at onset 53 ± 29 hours Mean duration 43 ± 23 hours Mean TsB at discontinuation 182 ± 20 micromol/L Rebound Jaundice	

		Mean BW: 3204 + 445 grams	or if TsB did not reach 205 once TsB stabilized and became lower than 75th centile on the hour specific nomogram Rebound Jaundice criteria TsB measured between 2 and 36 hours after discontinuation of phototherapy If TsB was > 120% of post-phototherapy or > 239 micromol/L were followed at 12-24 hour intervals Phototherapy was r-continued at clinician discretion but usually not below 256 micromol/L	30/196 (15.3%) **Phototherapy after readmission** Mean TsB at onset: 318 + 22 micromol/L Age at onset 122 + 38 hours Mean duration 30 + 9 hours Mean TsB at discontinuation 182 + 18 micromol/L Rebound Jaundice 0/30 (0.0%)	
Author: Barak M	Study Type: RCT	Diagnosis Hyperbilirubinaemia	Once TsB reached criteria for phototherapy (AAP 2004) the baby was given phototherapy to two group for when phototherapy should be discontinued	Duration of phototherapy: Group 1: 22 + 13 hours Group 2: 27 + 12 hours	

<u>Year</u>: 2009 <u>Country</u>: Israel ID: [184]	<u>Evidence Level:</u> 1^{++}	<u>Criteria:</u> GA > 36 weeks BW > 2500 grams <u>Setting</u> Medical Center <u>Randomisation method:</u> Computer-generated block randomisation. Sequence was concealed until allocation was completed <u>Blinding:</u> Parents <u>Demographics:</u> Sample size: 52 Gender (M/F): 27/25 Mean GA: 38.7 ± 1.6 weeks Mean BW:	Group 1 TsB ≥ 17 micromol/L below threshold Group 2 TsB ≥ 51 micromol/L below threshold	<u>Rebound level – 10 hours:</u> Group 1: 1.8 ± 25.6 micromol/L Group 2: 4.8 ± 22.2 micromol/L <u>Rebound level – 28 hours:</u> Group 1: 19.1 ± 29.1 micromol/L Group 2: 11.6 ± 36.4 micromol/L <u>Number requiring PT</u> Group 1: 5/25 (20.0%) Group 2: 5/27 (18.5%)	

		3302 ± 453 grams Mean TsB: 252 + 36 micromol/L			

Exchange transfusion

Bibliographic Information	Study Type & Evidence Level	Number of Patients/ Characteristics	Intervention & Comparison	Dichotomous outcomes (E:C)	Continuous Outcomes (Mean:SD: N)	Comments
Author: Tan K Year: 1975 Country: Singapore ID: [196]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1^-	N: 52 Inclusion: Non-hemolytic jaundice Exclusion: Not reported Demographics: Gender (M/F): 28/24 Mean GA: 37.0 ± 2.78 weeks Mean BW: 2501 ± 576 gms Age at entry to study 84 ± 12 hrs	Group 1: Double Volume Exchange transfusion Group 2: Phototherapy Both treatments initiated at 256.micromol/L in pre-term babies and at 308 micromol/L in term babies Exchange transfusion was performed in the morning using the umbilical vein. Acid Citrate Dextrose blood (warmed to $37^{O}C$) less than 5 days old was used. Volume was 170ml/kg body weight Daily TSB values from capillary blood were determined until stabilization at a safe level or an obviously decreasing trend were	Mortality: Group 1: 0/26 Group 2: 0/26 Treatment failure (repeated treatment) Group 1: 8/26 Group 2: 0/26 TSB < 188 micromol/L Group 1: 3/26 Group 2: 25/26	Mean decrease in TSB (24 hours): Group 1: -26 ± 24 micromol/L Group 2: -77 ± 17 micromol/L	

		Mean TSB: 297 + 25 micromol/L	observed. Phototherapy consisted of seven fluorescent lamps Light spectral range = 400 – 500 nm Energy output range = 250 –330 µW/cm^2 Phototherapy discontinued at TSB < 188 micromol/L			
Author: Amato M Year: 1988 Country: Switzerland ID: [194]	Methodology: RCT Blinding: Not reported Randomisation: Random numbers table Evidence level: 1$^-$	N: 20 Inclusion: ABO incompatibility, Hyperbilirubinaemia Exclusion: Perinatal asphyxia, Congenital anomalies, Documented congenital infection, Suspected or proven bacterial infection,	Group 1: Double Volume Exchange Transfusion Group 2: Single Volume Exchange Transfusion Blood preparation A unit of packed red cells was used. Mean blood volume of each unit was 280 + 40 ml (2/3 red cell volume and 1/3 plasma volume) Mean sodium was 168 + 43 micromol/L Mean potassium 6.8 + 1.4 micromol/L No immunoglobulin or clotting factors were present.	Mortality: Group 1: 0/10 Group 2: 0/10	Mean decrease in TSB: Group 1: -73 + 33 micromol/L Group 2: -69 + 20 micromol/L Duration of phototherapy (hours): Group 1: 38.1 + 16.4 hours Group 2: 45.4 + 17.7 hours Rebound level: Group 1: 74 + 41 micromol/L Group 2: 65 + 17 micromol/L	

		Respiratory distress, Secondary hyperbilirubinaemia (due to medications, polycythemia, skin hematomas or cephalhematoma) Demographics: Gender (M/F): 15/5 Mean GA: 39.5 + 1.0 weeks Mean BW: 3305 + 392 gms Age at entry to study 17.9 + 6.13 hrs Mean TSB: 207 + 45 micromol/L	Hemoglobin and hematocrit values were equally distributed between the two samples. Exchange transfusion was performed through the umbilical vein in 1 hour using a disposable exchange transfusion set in 10 ml portions. No additional calcium or human albumin given All babies received double phototherapy after exchange transfusion. Phototherapy consisted of a double blue light united (2 x 30µW/cm^2) mounted 30 cm above and under the mattress. Babies were nursed with 10%(120ml/kg) glucose Phototherapy discontinued at TSB < 205 micromol/L on two successive occasions. Rebound jaundice was defined as a rise of 17 micromol/L or more after treatment was discontinued.			
Author: Chan G	Methodology: RCT	N: 42	Group 1: Double Volume Exchange Transfusion	Mortality: Group 1: 0/27	Mean decrease in TSB: Group 1: -193 + 56 micromol/L	

Year: 1976 Country: Canada ID: [197]	Blinding: Not reported Randomisation: Not reported Evidence level: 1^-	Inclusion: Need for exchange transfusion Exclusion: Not reported Demographics: Gender (M/F): 25/17 Mean GA: 36.0 $\pm$ 0.7 weeks Mean BW: 2455 $\pm$ 153 gms Age at entry to study Not reported Mean TSB: 263 $\pm$ 82 micromol/L	Group 2: Double Volume Exchange Transfusion + Albumin priming Double Volume Exchange Transfusion consisted of Acid Citrate Dextrose blood less than 48 hours old Albumin priming consisted 1 gm/kg of salt-poor human albumin given intravenously 1 hour prior to the exchange transfusion	Group 2: 0/15	Group 2: -168 $\pm$ 63 micromol/L Rebound level: Group 1: 74 $\pm$ 32 micromol/L Group 2: 92 $\pm$ 56 micromol/L	
Author: Grajwer L Year: 1976 Country:	Methodology: RCT Blinding: Not reported Randomisation:	N: 43 Inclusion: Need for exchange transfusion Exclusion:	**>2500gms** Group 1: Double Volume Exchange Transfusion of whole blood less than 5 days old Group 2: Frozen erythrocytes diluted in plasma	**>2500gms** Mortality: Group 1: 0/5 Group 2: 1/8 **<2500gms** Mortality:	**>2500gms** Mean decrease in TSB: Group 1: -144 $\pm$ 17 micromol/L Group 2: -149 $\pm$ 22 micromol/L **<2500gms** Mean decrease in TSB:	Sample was divided into 2 groups <2500gms and > 2500gms before randomisation

USA ID: [198]	Not reported Evidence level: 1-	Not reported Demographics: **>2500gms** Gender (M/F): Not reported Mean GA: 39.1 + 1.8 weeks Mean BW:3234 + 494 gms Age at entry to study Not reported Mean TSB: 328 + 25 micromol/L **<2500gms** Gender (M/F): Not reported Mean GA: 32.6 + 3.2 weeks Mean BW:1670 + 434 gms Age at entry to study Not reported Mean TSB: 304 + 48 micromol/L	**<2500gms** Group 1: Exchange transfusion of whole blood less than 5 days old Group 2: Frozen erythrocytes diluted in plasma Exchange transfusion criteria were 1/ Cord bilirubin >85.5 micromol/L and rapidly increasing by more than 8.5 micromol/L an hour) 2/ Increase of TSB >17.1 micromol/L per hour during first 24 hours if cord bilirubin is unknown 3/ Two repeated values of 342 micromol/L indirect bilirubin for babies > 2500 gms or 273.6 micromol/L in babies < 2500gms 4/ In sick premature babies with asphyxia or acidosis or receiving ventilatory assistance ET was performed at two repeated values of 356.5 micromol/L Exchange transfusion was repeated after two	Group 1: 1/14 Group 2: 3/16 **>2500gms** Repeat ET: Group 1: 1/5 Group 2: 1/8 **<2500gms** Repeat ET: Group 1: 4/14 Group 2: 7/16	Group 1: -156 + 51 micromol/L Group 2: -177 + 24 micromol/L	

			repeated values of 342 micromol/L indirect bilirubin for babies > 2500gms and 273.6 micromol/L for babies < 2500gms			
Author: Locham K Year: 2002 Country: India ID: [199]	Methodology: CCT Blinding: None Randomisation: None Evidence level: 1^-	N: 30 Inclusion: Jaundice requiring exchange transfusion Exclusion: Not reported Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: Not reported Age at entry to study Hrs: Not reported Mean TSB: Not reported	Group 1: Double Volume Exchange Transfusion Group 2: Double Volume Exchange Transfusion + Supplementary calcium		No jaundice related outcomes	Noted increased instances of bradycardia and fluctuations in heart rate after calcium injections. One baby had cardiac arrest.
Author: Ahmed S	Methodology: Case series	N: 198	Peripheral exchange transfusion	Reported decreased chances of sepsis, complete exchange and more safety in peripheral exchange	:	

Year: 2005 Country: India ID: [200]	Blinding: None Randomisation: None Evidence level: 1-	Inclusion: Need for exchange transfusion Exclusion: None Demographics: Gender (M/F): 65/3 Mean GA: 34.5 weeks Mean BW: Not reported Age at entry to study Not reported Mean TSB: Not reported	Brachial or radial artery was cannulated with a 24G cannula under all aseptic conditions. A good peripheral or antecubital vein on the other side was cannulated with a 22G or a 24G angiocath. Citrate phosphate dextrose fresh blood was used for the procedure & and phototherapy was used pre & post exchange. Two operators carried out the procedure using aliquots of 5-10 ml on withdrawal; and infusion. Three way stop-cocks were used on either side and arterial catheter flushed with 0.5ml of heparin solution (5units/ml) after every 50ml. Procedure was performed under radiant warmer with monitoring of heart rate, respiratory rate, body temperature and oxygen saturation.	transfusion/ It is also cost effective as only two angiocaths, two stop-cocks and two 10ml syringes are needed compared to a complete exchange set used in umbilical route.		
Author: Keenan W Year: 1985 Country:	Methodology: Cohort study Blinding: None Randomisation:	N: 190 Inclusion: Received an exchange transfusion Exclusion:		Adverse effects: :Transient bradycardia: 8 (4.2%) - 6 with calcium Transient cyanosis: 3 (1.6%) Transient vasospasm: 2 (1.0%)	Mean decrease in TSB after ET: 139 ± 30 micromol/L	NICCHD study

USA ID: [122]	None Evidence level: 2⁻	None Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: Not reported Age at entry to study Not reported Mean TSB: Not reported		Vasospasm with thrombosis: 2 (1.0%) Apnea and/or bradycardia requiring treatment: 7 (3.7%) Mortality: One baby died with 6 hours of ET Three died with 24 hours of ET		
Author: Mollison P Year: 1952 Country: UK ID: [192]	Methodology: RCT Blinding: Not reported Randomisation: Random numbers, Sealed envelopes used	N: 137 Inclusion: Haemolytic disease of the newborn, Term babies Exclusion: Not reported	Group 1: Exchange transfusion Group 2: Simple transfusion All exchange transfusion were carried out with 9 hours of birth, using a concentrated suspension of Rh-negative red cells (60ml/lb)	Mortality: Group 1: 8/62 Group 2: 21/57 Deaths due to kernicterus Group 1: 6/62 Group 2: 18/57 Kernicterus		Data from one centre "N" used

	Evidence level: 1^+	Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: Not reported Age at entry to study Not reported Mean TSB: Not reported		Group 1: 12/62 Group 2: 22/57		
Author: Armitage P Year: 1953 Country: UK ID: [193]	Methodology: RCT Blinding: Not reported Randomisation: Random numbers, Sealed envelopes used Evidence level: 1^+					Secondary publication of [192]

Author: Patra K Year: 2004 Country: USA ID: [201]	Methodology: Retrospective chart review Blinding: Not reported Randomisation: Not reported Evidence level: 3^-	N: 55 Inclusion: Babies who had an exchange transfusion, Hyperbilirubinaemia Exclusion: Poplycythemia, anaemia Demographics: Gender (M/F): 30/25 Mean GA: 35 $\pm$ 4 weeks Mean BW:2388 $\pm$ 973 grams Age at entry to study: Not reported Mean TSB: 307.8 $\pm$ 136.8 micromol/L		Adverse Effects/ET Mortality: 1/66 Hypotension: 5/66 Seizures: 1/66 Platelets <50,000 µl/L : 29/66 Calcium <8mg/dl: 19/66 Catheter malfunction: 6/66 Hypoglycemia: 2/66 Respiratory distress: 2/66 Bradycardia: 1/66 Hypokalemia: 1/66 Acute renal failure: 1/66 Omphalitis: 1/66		

Author: Wishingrad L Year: 1965 Country: USA ID: [191]	Methodology: RCT Blinding: Not reported Randomisation: Stratified randomisation And sealed envelopes used Evidence level: 1^{+}	N: 100 Inclusion: Indirect serum Bilirubin > 307.8 micromol/L No anomalies, Less than 7 days old Exclusion: Not reported Demographics: Gender (M/F): Unclear Mean GA: Not reported Mean BW: Not reported Age at entry to study: Not reported Mean TSB: Not reported	Group 1: Double volume exchange transfusion Group 2: No treatment The double volume exchange transfusion (based on an estimated blood volume of 75ml/kg) was carried out with type specific blood, less than 72 hours old, and warmed to room temperature. The umbilical vein was cannulated with a plastic catheter and plastic disposable equipment used. 10ml aliquots were used. Small amounts (0.5ml) of 10% calcium gluconate were given after each 100ml of donor blood with continuous auscultation of the heart. All babies in exchange transfusion group received penicillin and streptomycin.	Mortality: Group 1: 3/50 Group 2: 3/50 Abnormal neurological examination (1 – 2 years) Group 1: 7/50 Group 2: 6/50		

Author: Jackson J Year: 1997 Country: USA ID: [202]	Methodology: Retrospective chart review Blinding: None Randomisation: None Evidence level: 3^-	N: 106 Inclusion: Babies who had an exchange transfusion Exclusion: None Demographics: Gender (M/F): Not reported Mean GA: 36.6 $\pm$ 3.6 weeks Mean BW: 2846 $\pm$ 806 grams Age at entry to study Not reported Mean TSB: Not reported	Group 1: Exchange transfusion	Mortality:due to ET 2/106 (1.9 %) Permament serious sequelae due to ET 4/106 (3.8%) Serious prolonged sequelae due to ET 5/106 (4.7%) Serious transient sequelae due to ET 18/106 (17.0%) Asymptomatic treated complications 27/106 (25.5%) Asymptomatic laboratory complications 11/106 (10.4%)		

What are the other ways of treating hyperbilirubinaemia? Are they effective?

Bibliographic Information	Study Type & Evidence Level	Number of Patients/ Characteristics	Intervention & Comparison	Dichotomous outcomes (E:C)	Continuous Outcomes (Mean:SD: N)	Comments
Author: Pascale J Year: 1976 Country: USA ID: [215]	Methodology: RCT Blinding: Not reported Randomisation: Random numerical selection Evidence level: 1^{+}	N: 24 Inclusion: Hyperbilirubinaemia Exclusion: Not reported Demographics: Gender (M/F): 12/12 Mean GA: Not reported Mean BW: Not reported Age at entry to study: 71.3 + 24.1 hours Mean TSB: Not reported	Group 1: Phototherapy Group 2: Low-irradiance Phototherapy + Riboflavin Group 3: Phototherapy + Riboflavin Riboflavin was given for 6 hours prior to phototherapy and was discontinued after 24 hours of phototherapy. Riboflavin consisted of sodium phosphate 1.5mg/kg every 12 hours Phototherapy irradiance was 8 – 10 µW/cm^2 Low irradiance was Phototherapy irradiance	:	Mean decrease in TSB (24 hours): Group 1: -53 $\pm$ 13.5 micromol/L Group 2: -52 $\pm$ 10.2 micromol/L Group 3: -89 $\pm$ 18.8 micromol/L	

			was 6 – 7 µW/cm^2			
Author: Pataki L Year: 1985 Country: Hungary ID: [216]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1$^-$	N: 28 Inclusion: ABO – Incompatible jaundice Exclusion: Not reported Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: 3338 ± 425 grams Age at entry to study: 50.2 ± 27.2 hours Mean TSB: 358 ± 71micromol/L	Group 1: Phototherapy Group 2: Phototherapy + Riboflavin Riboflavin (Vitamin B_2) was diluted by a three-fold volume of physiological saline and a single intravenous dose of 10mg/kg was given slowly.		Mean decrease in TSB (3 hours) Group 1: 32 ± 55 micromol/L Group 2: -87 ± 40 micromol/L	Subjects were awaiting exchange transfusion
Author: Yurdakok M	Methodology: RCT	N: 124	Group 1: Phototherapy		Mean decrease in TSB: Group 1: -55 ± 67.2 micromol/L Group 2: -85 ± 42.1 micromol/L	

Year: 1988 Country: Turkey ID: [217]	Blinding: Not reported Randomisation: Not reported Evidence level: 1^-	Inclusion: Indirect hyperbilirubinaemia Exclusion: Those who received exchange transfusions Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: 3230 ± 502 grams Age at entry to study: 61.9 ± 11.0 hours Mean TSB: Not reported	Group 2: Phototherapy + Riboflavin Riboflavin (Vitamin B_2) was given as a single oral dose of 3mg/kg within 30 minutes of start of phototherapy.		Mean duration of treatment: Group 1: 45.7 ± 27.5 hours Group 2: 55.0 ± 31.1 hours	
Author: Ashkan M Year: 2007 Country:	Methodology: RCT Blinding: Not reported Randomisation: Computerized using	N: 90 Inclusion: Term babies, Birthweight between 2500 and 3500 grams, TsB between 292 and 425	Group 1: Phototherapy Group 2: Phototherapy + Low-dose clofibrate Group 2:	No side-effects were noted	Mean decrease in TSB (24 hours) : Group 1: -104 ± 14 micromol/L Group 2: -186 ± 13 micromol/L Group 3: -186 ± 16 micromol/L Mean duration of treatment:	Clofibrate groups were combined

Iran ID: [203]	sealed opaque envelopes Evidence level: 1++	micromol/L Exclusion: Congenital anomaly, Haemolytic disease, Infection, Dehydration, G-6-PD deficiency, Conjugated hyperbilirubinaemia Demographics: Gender (M/F): 47/43 Mean GA: 38.8 + 1.6 weeks Mean BW: 2542 + 547 grams Age at entry to study: 125 + 45.6 hours Mean TSB: 301 + 23.4 micromol/L	Phototherapy + Moderate-dose clofibrate Clofibrate was administered in a single dose (either low-dose = 25mg/kg or moderate dose = 50mg/kg) orally in a mixture of corn oil 30 minutes before breastfeeding.		Group 1: 25.3 + 4.4 hours Group 2: 14.2 + 1.2 hours Group 3: 14.7 + 1.5 hours	
Author: Mohammadzadeh A	Methodology: RCT	N: 60	Group 1: Phototherapy	No adverse effects noted	Mean decrease in TSB: Group 1: -210 + 44 micromol/L Group 2: -184 + 37 micromol/L	

Year: 2005 Country: Iran ID: [204]	Blinding: Not reported Randomisation: Random numbers table Evidence level: 1^+	Inclusion: Term, breastfed babies, TsB between 291 and 512micromol/L Exclusion: Congenital anomaly, Haemolytic disease, Dehydration, G-6-PD deficiency, Conjugated hyperbilirubinaemia Demographics: Gender (M/F):34/26 Mean GA: 38.7 ± 0.9 weeks Mean BW: 3259 ± 481 grams Age at entry to study: 216 ± 94.8 hours Mean TSB: 395 ± 58 micromol/L	Group 2: Phototherapy + Clofibrate Clofibrate was administered in a single oral dose (100mg/kg birthweight)		Mean duration of treatment: Group 1: 54 ± 18.8 hours Group 2: 30 ± 12.9 hours	
Author: Zahedpasha Y	Methodology: RCT	N: 60	Group 1: Phototherapy + Placebo	No adverse effects were noted	Mean decrease in TSB: Group 1: -108 ± 24 micromol/L	

Year: 2007 Country: Iran ID: [206]	Blinding: No reported Randomisation: Not reported Evidence level: 1-	Inclusion: Gestational age between 38 and 41 weeks, TsB between 256 and 427micromol/L Exclusion: Haemolytic disease, Rh or ABO incompatibility, G-6-PD deficiency, dehydration, Infection, Conjugated hyperbilirubinaemia, History of Phenobarbital intake by mother or infant Demographics: Gender (M/F): 28/32 Mean GA: Not reported Mean BW: Not reported Age at entry to study: 144 ± 71 hours	Group 2: Phototherapy + Clofibrate Subject in the clofibrate group received a single oral dose of clofibrate (100mg/kg) while the control group received distilled water in the same amount and colour.		Group 2: -148 ± 20 micromol/L	

		Mean TSB: 305 + 36micromol/L				
Author: Zahedpasha Y Year: 2008 Country: Iran ID: [207]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1-	N: 40 Inclusion: G-6-PD deficiency, Gestation age between 38 and 41 weeks, Birthweight > 2500 grams TsB between 256 and 342 micromol/L Exclusion: Haemolytic disease, conjugated hyperbilirubinaemia, dehydration, infection, history of Phenobarbital intake by mother or infant Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: 3257 + 479 grams	Group 1: Phototherapy Group 2: Phototherapy + Clofibrate Subject in the clofibrate group received a single oral dose of clofibrate (100mg/kg)	No adverse effects were noted	Mean decrease in TSB: Group 1: -104 + 29 micromol/L Group 2: -142 + 26 micromol/L	

		Age at entry to study: 123 + 55 hours Mean TSB: 307 + 33micromol/L				
Author: Eghbalian F Year: 2007 Country: Iran ID: [205]	Methodology: RCT Blinding: Not reported Randomisation: Random numbers table Evidence level: 1^{+}	N: 60 Inclusion: Term, breastfed babies, Birthweight > 2500 grams, TsB between 256 and 427micromol/L Exclusion: Congenital anomalies, Haemolytic disease, Sepsis, Dehydration, Exchange transfusion Demographics:	Group 1: Phototherapy Group 2: Phototherapy + Clofibrate Subject in the clofibrate group received a single dose of clofibrate (100mg/kg)	No adverse effects were noted	Mean decrease in TSB: Group 1: -137 + 45 micromol/L Group 2: -171 + 30 micromol/L Mean duration of treatment: Group 1: 68.8 + 21.6 hours Group 2: 53.6 + 15 hours	

Author: Miqdad A Year: 2004 Country: Saudi Arabia ID: [209]	Methodology: RCT Blinding: Not reported Randomisation: Not reported Evidence level: 1^{-}	N: 112 Inclusion: Hyperbilirubinaemia due to ABO incompatibility Exclusion: Low birthweight, Rh haemolytic disease,, Perinatal asphyxia, severe congenital malformations Demographics: Gender (M/F): 70/42 Mean GA: 38 weeks Mean BW: Not reported Age at entry to study: Not reported Mean TSB: Not reported	Group 1: Phototherapy Group 2: Phototherapy + IVIG 500mg/kg over 4 hours	Mortality: Group 1: 4/56 Group 2: 16/56	Mean duration of treatment: Group 1: 106 $\pm$ 29 hours Group 2: 92 $\pm$ 29 hours	
Author: Voto L	Methodology: RCT	N: 40	Group 1: Phototherapy	Exchange transfusion: Group 1: 8/19		

Year: 1997 Country: Argentina ID: [208]	Blinding: Not reported Randomisation: Not reported Evidence level: 1^-	Inclusion: Rh positive blood type and Positive Coombs' test Exclusion: Rh positive blood and negative Coombs' test, Histroy of prenatal therapy (Imaternal IVIG/IUT) ABO incompatibility, Other causes of haemolyisis Demographics: Gender (M/F): Not reported Mean GA: 37.2 ± 2.7 Mean BW: 2834 ± 569 grams Age at entry to study: Not reported Mean TSB: Not reported	Group 2: Phototherapy + IVIG 800mg/kg/day for 3 days	Group 2: 12/18 No adverse effects were noted		
Author: Rubo J	Methodology: RCT	N: 32	Group 1: Phototherapy	Exchange transfusion: Group 1: 11/16	Max TsB: Group 1: 240 ± 78 micromol/L	Prevention study One baby in each

Year: 1992 Country: Germany ID: [210]	Blinding: Not reported Randomisation: Not reported Evidence level: 1-	Inclusion: Babies with Rh antigens born to mothers lacking Rh antigens, Positive Coombs' test Exclusion: Not reported Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: Not reported Age at entry to study: Not reported Mean TSB: Not reported	Group 2: Phototherapy + IVIG 500mg/kg over 2 hours	Group 2: 2/16 No adverse effects were noted	Group 2: 254 ± 86 micromol/L:	group excluded for protocol violations
Author: Dagoglu T Year: 1995	Methodology: RCT Blinding: None	N: 41 Inclusion: Babies with Rh antigens born to mothers lacking Rh antigens,	Group 1: Phototherapy Group 2: Phototherapy + IVIG 500mg/kg as soon as possible after birth	Exchange transfusion: Group 1: 15/19 Group 2: 4/22	Max TSB: Group 1: 224 + 99 micromol/L Group 2: 198 + 106 micromol/L	

Country: Turkey ID: [211]	Randomisation: Random numbers table with sealed envelopes Evidence level: 1++	Positive Coombs' test Exclusion: Not reported Demographics: Gender (M/F): 25/16 Mean GA: 36.1 ± 2.0 weeks Mean BW: 2776 ± 419 grams Age at entry to study: Not reported Mean TSB: Not reported				
Author: Nasseri F Year: 2006 Country: Iran	Methodology: RCT Blinding: Not reported Randomisation: Not reported	N: 34 Inclusion: Gestation age > 37 weeks, Positive Coombs' test, Significant hyperbilirubinaemia rising at 8.5micromol/L per hour, TsB below exchange transfusion levels,	Group 1: Phototherapy Group 2: Phototherapy + IVIG IVIG (500mg/kg) was given with 2-4 hours of admission for 3 consecutive doses each 12 hours	Exchange transfusion: Group 1: 11/17 Group 2: 3/17 No adverse effects were noted	Mean duration of treatment: Group 1: 154 ± 48 hours Group 2: 119 ± 23 hours	

ID: [212]	Evidence level: 1⁻	Exclusion: Risk factors for hyperbilirubinaemia i.e. sepsis, G-6-PD deficiency Demographics: Gender (M/F): 14/20 Mean GA: Not reported Mean BW: 2683 $\pm$ 292 grams Age at entry to study: 20.2 $\pm$ 9.5 hours Mean TSB: 254 $\pm$ 57micromol/L				
Author: Farhat A Year: 2006 Country: Iran	Methodology: RCT Blinding: Double-blind Randomisation: Not reported	N: 104 Inclusion: TsB between 308 and 496micromol/L Exclusion: Birthweight < 2500 grams, Renal failure,	Group 1: Phototherapy + Placebo Group 2: Phototherapy + Shirkhest Shirkhest (6 grams) was diluted in 8mL of distilled water while the control group were given a starch solution (0.1%, 8mL) coloured with 1 drop of caramel solution to appear identical to Shirkhest solution.	No adverse effects were noted	Mean decrease in TsB: Group 1: -164 Group 2: -154	

ID: [223]	Evidence level: 1-	Systemic infections, Already taken Shirkhest Demographics: Gender (M/F): Not reported Mean GA: Not reported Mean BW: Not reported Age at entry to study: Not reported Mean TSB: 401 $\pm$ 53 micromol/L	Phototherapy was discontinued at 256micromol/L			
Author: Nicolopoulos D Year: 1978 Country: Greece ID: [218]	Methodology: CCT Blinding: Not reported Randomisation: Alternation Evidence level: 2-	N: 40 Inclusion: Jaundice Exclusion: Babies of diabetic mothers, Rh incompatibility, Perinatal asphyxia, Large cephalhaematoma	Group 1: Phototherapy Group 2: Phototherapy + Cholestyramine Babies received 1.5gm/kg/day of cholestyramine powder mixed in milk No Phenobarbital, other medications, or parenteral fluids were administered.	No adverse effects were noted	Mean duration of treatment: **Term babies** Group 1: 84.4 $\pm$ 12 hours Group 2: 41.8 $\pm$ 5.5 hours **Pre-term babies** Group 1: 73.3 $\pm$ 9 hours Group 2: 47.0 $\pm$ 6 hours	

		Demographics: **Term babies** Gender (M/F): 6/14 Mean GA: 39.1 + 0.3 weeks Mean BW: 3286 + 39 grams Age at entry to study: 90 + 1.5 hours Mean TSB: 298 + 5 micromol/L **Pre-term babies** Gender (M/F): 9/11 Mean GA: 33.4 + 0.3 weeks Mean BW: 2077 + 88 grams Age at entry to study: 76 + 2.9 hours Mean TSB:198 + 5micromol/L				
Author: Tan K Year: 1984	Methodology: CCT Blinding: Not reported	N: 84 Inclusion: Term babies with non-haemolytic hyperbilirubinaemia	Group 1: Phototherapy Group 2: Phototherapy + Cholestyramine		Mean decrease in TSB: Group 1: -168 + 24 micromol/L Group 2: -150 + 20 micromol/L	

Country: Singapore ID: [219]	Randomisation: Alternation Evidence level: 2⁻	(TsB > 256.5micromol/L) Normal G-6-PD status, No isoimmunization, no cephalhaematoma Exclusion: Not reported Demographics: Gender (M/F): Not reported Mean GA: 38.9 + 0.2 weeks Mean BW: 3154 + 139 grams Age at entry to study: 84 + 2.9 hours Mean TSB: 298 + 5micromol/L	Babies received 1.5gm/kg/day of cholestyramine powder mixed in milk			
Author: Martin J Year: 1974 Country: New Zealand	Methodology: CCT Blinding: Not reported Randomisation:	N: 100 Inclusion: physiological jaundice Exclusion: Not reported	Group 1: Usual nursery care Group 2: Usual nursery care + Conventional phototherapy	ET: Group 1: 3/35 Group 2: 0/34 Group 3: 1/31 Mortality:	Mean duration of phototherapy Group 1: NA Group 2: 67 + 33 hours Group 3: 72 + 31 hours Mean rise to max TSB:	No significant differences between groups No reason given for mortality

ID: [222]	"allocated in rotation" Evidence level: 1-	Demographics: Gender (M/F) : 49/51 Mean GA: 34.8 ± 2.7 weeks Mean BW: 2155 ± 632 gms Age at entry to study 48.1 ± 14.7 hrs Mean TSB: 174 ± 40 micromol/L	Group 3: Usual nursery care + phototherapy + phenobarbital (dosage not reported) Conventional Phototherapy consisted of a single bank of eight 30 watt fluorescent tubes behind a Perspex screen 50cm above the baby in a bassinet Light intensity = 2500 lux Light band = 441 nm Baby naked and with eyes covered No deliberate attempt to sequentially rotate the baby	Group 1: 2/35 Group 2: 0/34 Group 3: 1/31	Group 1: 80.4 ± 49.6 micromol/L Group 2: 22.2 ± 29.1 micromol/L Group 3: 18.8 ± 29.1 micromol/L Time to max TSB (hours): Group 1: 51 ± 23 hours Group 2: 14 ± 19 hours Group 3: 13 ± 18 hours	
Author: Odell G Year: 1983 Country: USA	Methodology: CCT Blinding: Not reported Randomisation: By patient number	N: 52 Inclusion: Hyperbilirubinaemia requiring phototherapy Exclusion: Not reported	Group 1: Phototherapy Group 2: Phototherapy + Agar 250mg orally every 8 hours during phototherapy Phototherapy initiated at 239.4 micromol/L for term babies and 171 micromol/L for pre-term babies		Mean duration of Phototherapy Group 1: 48.1 + 23.0 hours Group 2: 37.6 + 18.0 hours	15 babies excluded retrospectively

ID: [220]	Evidence level: 2-	Demographics: Gender (M/F): 31/21 GA: Not reported BW:2767 + 69 grams Mean age at entry to study: 80.6 + 28.7 hours Mean TSB: 234 + 46.8 micromol/L	Phototherapy discontinued 188.1 micromol/L for term babies and 171 micromol/L for pre-term babies			
Author: Ebbesen F Year: 1977 Country: Denmark ID: [221]	Methodology: CCT Blinding: Not reported Randomisation: By patient number Evidence level: 2-	N: 49 Inclusion: Hyperbilirubinaemia requiring phototherapy Exclusion: Not reported Demographics: Gender (M/F): 26/23 GA: 36.8 + 2.5 weeks	Group 1: Phototherapy Group 2: Phototherapy + Agar 250mg orally at feedings every three hours Phototherapy initiated at 274 micromol/L Phototherapy discontinued when TsB fell continuously for 24 hours		Mean decrease in TsB Group 1: 87 + 39 micromol/L Group 2: 85 + 40 micromol/L Mean duration of Phototherapy Group 1: 60 + 30 hours Group 2: 61 + 28 hours	

		BW:2729 ± 538 grams Mean age at entry to study: 87 ± 26 hours Mean TSB: 274 ± 51 micromol/L				

What information and support should be given to parents/carers of babies with neonatal hyperbilirubinaemia?

Author: Salem-Schatz S Year: 2004 Country: USA ID: [225]	Study Type: Focus group study Evidence Level: III	Four focus groups 1 for physicians (N = 9) 1 for nurses (N = 9) 2 for parents/carers (N = 14) Aim: To identify barriers to timely follow-up of hyperbilirubinaemia in 1st 7 days Focus had between 7 and 9 participants and lasted for between 90 and 120 minutes Content was the importance of 1st week newborn follow-up and key questions relating to physican and parent/carer experiences	Barriers - communication Conflicting advice from HCP's on readiness for discharge - MD Communication gaps between handover from hospital to community - MD, RN Key information missing MD, RN Barriers – systems and process Delays in outpatient bilirubin testing and reporting - MD, RN Barrier to home visits – MD, RN, P Barriers to office visits in week 1 – MD, RN, P	Solutions - communication Improve communication between HCP - MD Notify community HCP by email when baby born – MD, RN Provide easy-access (on-line or form parent) for community HCP for lab results – MD, RN Give parents/carers 'early warning signs' to report – MD, P Continued contact from birth hospital to parent/carer – P Solutions – systems and process Home visit by a physician – P Encourage home visits, RN, P Choose paediatrician before discharge/book appointment before discharge – MD Separate visiting toom for well children – P More flexible visiting time – P Community HCP to visit pre-discharge – RN, P	MD = physician RN = Nurse P = Parent

			Barriers – systems and process Shorter hospital stays leave less time for parent education –RN Clinicians may be reluctant to educate about hyperbilirubinaemia prenatally – MD, RN Poor understanding by clinicians of risks of near-terms – MD Lack of clinician awareness of the recommendations of early follow-up visits – MD HCP recommendations forgotten once parent is home – P	Ensure quick easy access to labs – MD, RN Solutions – systems and process Increase professional awareness – MD, RN Parental education through continuum of care – MD, RN, P Support groups for new and expectant parents – MD, RN	

Author: Willis S Year: 2002 Country: USA ID: [227]	Study Type: Qualitative study Evidence Level: III	Population Mother of newborn babies with jaundice Criteria: Breastfeeding babies with TsB > 170 micromol/L Setting Hospital Demographics: Sample size: 45 Mean age: 27 years More than half of multiparous mother had a previous baby with jaundice and ¾ had breastfed a previous child. Mothers interview between 2.5 and 14.5 weeks postpartum	Half of the mothers described how jaundice had influenced, positive or negatively their breastfeeding patterns.		