National Clinical Guideline Centre

Draft for consultation

IV fluids in children

Intravenous fluid therapy in children and young people in hospital

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Appendix I

May 2015

Draft for consultation

Commissioned by the National Institute for Health and Care Excellence

Royal College of Physicians

The Royal College of Surgeons of England

RC GP Royal College of General Practitioners

Royal College of Nursing

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Disclaimer
Healthcare professionals are expected to take NICE clinical guidelines fully into account when exercising their clinical judgement. However, the guidance does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of each patient, in consultation with the patient and/or their guardian or carer.

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None

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None

I.1.2.2 Point of care versus laboratory testing

Table 1: Laboratory versus point-of-care

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Point-of-care	Laboratory	Relative (95% CI)	Absolute		
Mortality												
1	Observational studies	Very serious[a]	No serious inconsistency	No serious indirectness	Serious[b]	None	5/80 (6.3%)	20%	RR 0.31 (0.12 to 0.81)	138 fewer per 1000 (from 38 fewer to 176 fewer)	VERY LOW	CRITICAL

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[b] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

I.1.2.3 Assessing dehydration and hypovolaemia

None

I.2 IV fluid therapy for fluid resuscitation

I.2.1 Fluid type for fluid resuscitation

Table 2: Dextran 6% versus Ringer's lactate solution: Dengue shock syndrome

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Dextran 6%	Ringer's lactate solution	Relative (95% CI)	Absolute		
Mortality												
3	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	No serious imprecision	None	0/193 (0%)	0%	Not pooled	Not pooled	LOW	CRITICAL
Days in hospital (better indicated by lower values)												
1	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	Very serious[c]	None	Median 4 (90% range 4-7) n=126	Median 4 (90% range 4-7) n=121	-	Not pooled	VERY LOW	IMPORTANT
Decrease in pulse at 1 or 2 hours (beats/min) (better indicated by lower values)												
2	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	No serious imprecision	None	n=67	n=26	-	MD 3.06 higher (2.01 lower to 8.13 higher)	LOW	CRITICAL

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*

[b] *Downgraded by 1 increment because patients had dengue shock syndrome rather than sepsis.*

[c] *Median and IQR given, could not analyse imprecision.*

Table 3: Gelatin versus 0.9% sodium chloride: Sepsis

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Gelatin	0.9% sodium chloride	Relative (95% CI)	Absolute		
Mortality												
1	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	Very serious[a]	None	9/29 (31%)	29%	RR 1.07 (0.49 to 2.32)	20 more per 1000 (from 148 fewer to 383 more)	LOW	CRITICAL
Haemodynamically stable at 6 hours												
1	Randomised trials	Serious[b]	No serious inconsistency	No serious indirectness	Very serious[a]	None	19/29 (65.5%)	73.3%	RR 0.89 (0.64 to 1.26)	81 fewer per 1000 (from 264 fewer to 191 more)	VERY LOW	CRITICAL
Haemodynamically stable at 12 hours												
1	Randomised trials	Serious[b]	No serious inconsistency	No serious indirectness	Serious[a]	None	21/26 (80.8%)	79.3%	RR 1.02 (0.78 to 1.33)	16 more per 1000 (from 174 fewer to 262 more)	LOW	CRITICAL

[a] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

[b] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*

Table 4: Gelatin versus 0.9% sodium chloride: Dengue shock syndrome

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Gelatin	0.9% sodium chloride	Relative (95% CI)	Absolute		
Mortality												
2	Randomised trials	No serious risk of bias	No serious inconsistency	Serious[a]	No serious imprecision	None	0/69 (0%)	0%	Not pooled	Not pooled	MODERATE	CRITICAL

Decrease in pulse at 1 or 2 hours (beats/min) (better indicated by lower values)												
2	Randomised trials	Serious[b]	No serious inconsistency	Serious[a]	No serious imprecision	None	n=69	n=68	-	MD 4.65 higher (1 to 8.31 higher)	LOW	CRITICAL

[a] *Downgraded by 1 increment because patients had dengue shock syndrome rather than sepsis*

[b] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*

Table 5: Dextran 6% versus 0.9% sodium chloride: Dengue shock syndrome

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Dextran 6%**	**0.9% sodium chloride**	**Relative (95% CI)**	**Absolute**		
Mortality												
2	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	No serious imprecision	None	0/67 (0%)	0%	Not pooled	Not pooled	LOW	CRITICAL
Decrease in pulse at 2 hours (beats/min) (better indicated by lower values)												
1	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	Serious[c]	None	n=12	n=12	-	MD 8.1 higher (6.28 lower to 22.48 higher)	VERY LOW	CRITICAL

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*

[b] *Downgraded by 1 increment because patients had dengue shock syndrome rather than sepsis*

[c] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

Table 6: Gelatin versus Ringer's lactate solution: Dengue shock syndrome

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Gelatin**	**Ringer's lactate solution**	**Relative (95% CI)**	**Absolute**		

Mortality												
2	Randomised trials	No serious risk of bias	No serious inconsistency	Serious[a]	No serious imprecision	None	0/69 (0%)	0%	Not pooled	Not pooled	MODERATE	CRITICAL
Decrease in pulse at 1 hour (beats/min) (Better indicated by lower values)												
2	Randomised trials	No serious risk of bias	No serious inconsistency	Serious[a]	No serious imprecision	None	n=69	n=68	-	MD 4.8 higher (1.15 to 8.45 higher)	MODERATE	CRITICAL

[a] *Downgraded by 1 increment because patients had dengue shock syndrome rather than sepsis*

Table 7: Dextran versus gelatin: Sepsis

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Dextran**	**Gelatin**	**Relative (95% CI)**	**Absolute**		
Mortality												
2	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	No serious imprecision	None	0/65 (0%)	0%	not pooled	Not pooled	LOW	CRITICAL
Cardiovascular compromise (change in heart rate) (better indicated by lower values)												
2	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	Serious[c]	None	n=65	n=69	-	MD 6.05 lower (9.06 to 3.03 lower)	VERY LOW	CRITICAL

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[b] *Downgraded by 1 increment because patients had dengue shock syndrome rather than sepsis*
[c] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

Table 8: Colloid versus albumin: Sepsis

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Colloid	Albumin	Relative (95% CI)	Absolute		
Mortality (assessed with: death)												
1	Randomised trials	No serious risk of bias	No serious inconsistency	Serious[a]	Serious[b]	None	7/44 (15.9%)	2.3%	RR 7 (0.9 to 54.55)	138 more per 1000 (from 2 fewer to 1000 more)	LOW	CRITICAL
Neurological compromise (assessed with: neurological sequelae)												
1	Randomised trials	No serious risk of bias	No serious inconsistency	Serious[a]	Very serious[b]	None	1/44 (2.3%)	8.1%	Peto OR 0.29 (0.04 to 2.18)	56 fewer per 1000 (from 77 fewer to 80 more)	VERY LOW	CRITICAL

[a] *Downgraded by 1 increment as the evidence was based on a population with malaria*
[b] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

Table 9: Albumin versus 0.9% sodium chloride: Malaria

Quality assessment							Number of patients		Effect		Quality	Importance
`Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Albumin	0.9% sodium chloride	Relative (95% CI)	Absolute		
Mortality at 28 days												
1	Randomised trials	No serious risk of bias[a]	No serious inconsistency	Serious[b]	Serious[c]	None	137/1063 (12.9%)	12.7%	RR 1.01 (0.81 to 1.27)	1 more per 1000 (from 24 fewer to	LOW	CRITICAL

										34 more)		
Mortality at 8 hours												
2	Randomised trials	Very serious[d]	Serious[e]	Very serious[b,f]	Very serious[c]	None	6/79 (7.6%)	16.5%	RR 0.49 (0.08 to 2.86)	84 fewer per 1000 (from 152 fewer to 307 more)	VERY LOW	CRITICAL
Pulmonary oedema												
3	Randomised trials	Serious[d]	Serious[e]	Serious[b]	Very serious[c]	None	14/1129 (1.2%)	0.6%	RR 1.11 (0.13 to 9.71)	1 more per 1000 (from 5 fewer to 52 more)	VERY LOW	CRITICAL
Neurological deterioration												
1	Randomised trials	Very serious[d]	No serious inconsistency	Serious[b]	Serious[c]	None	1/56 (1.8%)	14.8%	RR 0.12 (0.02 to 0.93)	130 fewer per 1000 (from 10 fewer to 145 fewer)	VERY LOW	IMPORTANT
Neurological sequelae												
2	Randomised trials	Serious[d]	No serious inconsistency	Serious[b]	Very serious[c]	None	28/1044 (2.7%)	4%	RR 1.26 (0.73 to 2.19)	10 more per 1000 (from 11 fewer to 48 more)	VERY LOW	IMPORTANT

[a] *Unclear if patients with hypotension analysed in a separate subgroup are analysed at 48 hours or 28 days*

[b] *Downgraded by 1 increment as the evidence was based on a population with malaria*

[c] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

[d] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[e] *Downgraded by 1 increment because heterogeneity*
[f] *Downgraded by 1 increment because mortality was at 8 hours rather than at 28 days*

Table 10: Albumin versus 0.9% sodium chloride

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Albumin	0.9% sodium chloride	Relative (95% CI)	Absolute		
Length of hospital stay (Better indicated by lower values)												
1	Randomised trials	Very serious[a]	No serious inconsistency	No serious indirectness	Serious[b]	None	n=15	n=18	-	MD 1.23 lower (3.75 lower to 1.29 higher)	VERY LOW	IMPORTANT

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[b] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

Table 11: Ringer's lactate solution versus hypertonic 0.9% sodium chloride

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Ringer's lactate solution	Hypertonic 0.9% sodium chloride	Relative (95% CI)	Absolute		
Mortality grouped (follow-up 3-15 days; assessed with: death)												
4	Randomised trials	No serious risk of bias	Very serious[a]	Serious[b]	Very serious[c]	None	11/106 (10.4%)	4.6%	RR 1.31 (0.51 to 3.44)	14 more per 1000 (from 23 fewer to 108 more)	VERY LOW	CRITICAL
Cardiovascular compromise (follow-up 3 days; assessed with: incidence of ARDS)												

1	Randomised trials	Serious[d]	No serious inconsistency	No serious indirectness	Serious[c]	None	4/17 (23.5%)	0%	Peto OR 8.04 (1.02 to 63.46)	240 more per 1000 (from 20 more to 450 more)	VERY LOW	CRITICAL
Cardiovascular compromise (follow-up 3 days; assessed with: arrhythmia)												
1	Randomised trials	Serious[d]	No serious inconsistency	No serious indirectness	Very serious[c]	None	3/17 (17.6%)	0%	Peto OR 7.48 (0.72 to 78.00)	180 more per 1000 (from 30 fewer to 380 more)	VERY LOW	CRITICAL
Length of hospital stay (measured with: days; better indicated by lower values)												
1	Randomised trials	Serious[d]	No serious inconsistency	No serious indirectness	Serious[c]	None	n=17	n=15	-	MD 8 lower (33.45 lower to 17.45 higher)	LOW	IMPORTANT

[a] *Downgraded by 2 increments because the point estimate varies widely across studies, unexplained by subgroup analysis*
[b] *Downgraded by 1 increment as the evidence was based on comparisons of different time points*
[c] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*
[d] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias*

I.2.2 Volume and rate of administration for fluid resuscitation

None

I.3 IV fluid therapy for routine maintenance

I.3.1 Fluid type for routine maintenance

Table 12: Ringer's lactate solution versus Ringer's lactate solution + 5% dextrose for routine maintenance

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Ringer's lactate	Ringer's lactate solution + 5%	Relative (95% CI)	Absolute		

							solution	dextrose				
Neurological sequelae (gross motor seizures)												
1	Randomised trials	Serious[a]	No serious inconsistency	No serious indirectness	Very serious[b]	None	1/19 (5.3%)	17.7%	RR 0.3 (0.03 to 2.6)	124 fewer per 1000 (from 172 fewer to 283 more)	VERY LOW	CRITICAL

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[b] *Downgraded by 1 increment if the confidence interval crossed MID or by 2 increments if the confidence interval crossed both MIDs*

Table 13: 0.9% sodium chloride versus Ringer's lactate solution + 5% dextrose

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**0.9% sodium chloride**	**Ringer's lactate solution + 5% dextrose**	**Relative (95% CI)**	**Absolute**		
Mortality												
1	Randomised trials	Very serious[a]	No serious inconsistency	Serious[b]	Very serious[c]	None	0/16 (0%)	5.9%	Peto OR 0.14 (0 to 7.25)	50 fewer per 1000 (from 59 fewer to 254 more)	VERY LOW	CRITICAL
Cardiorespiratory arrest												
1	Randomised trials	Very serious[a]	No serious inconsistency	No serious indirectness	Very serious[c]	None	0/16 (0%)	11.8%	Peto OR 0.13 (0.01 to 2.26)	101 fewer per 1000 (from 117 fewer to 114 more)	VERY LOW	CRITICAL
Mean days in ICU (better indicated by lower values)												
1	Randomised trials	Very serious[a]	No serious inconsistency	No serious indirectness	Serious[c]	None	n=16	n=17	-	MD 3.25 lower per 1000 (6.51 lower to 0.01 higher)	VERY LOW	IMPORTANT

Mean days to discharge from hospital (better indicated by lower values)												
1	Randomised trials	Very serious[a]	No serious inconsistency	No serious indirectness	No serious imprecision	None	n=16	n=17	-	MD 4.1 lower (5.83 to 2.37 lower)	LOW	IMPORTANT
Hypoglycaemia												
1	Randomised trials	Very serious[a]	No serious inconsistency	No serious indirectness	No serious imprecision	None	0/16 (0%)	0%	Not pooled	not pooled	LOW	IMPORTANT

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[b] *Mortality not at 28 days; 1 of the patients with cardiorespiratory arrest subsequently died*
[c] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

Table 14: Isotonic versus hypotonic solution for routine maintenance in children aged 48 hours to 28 days

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Isotonic solution**	**Hypotonic solution**	**Relative (95% CI)**	**Absolute**		
Hyponatraemia (follow-up 24 hours; assessed with: <135mmol sodium)												
1	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	No serious imprecision	None	3/42 (7.1%)	42.9%	RR 0.17 (0.05 to 0.52)	356 fewer per 1000 (from 206 fewer to 408 fewer)	HIGH	IMPORTANT
Severe hyponatraemia (follow-up 8 hours; assessed with: <130 mmol sodium)												
1	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	Very serious[a]	None	0/42 (0%)	4.8%	Peto OR 0.13 (0.01 to 2.15)	50 fewer per 1000 (from 120 fewer to 30 more)	LOW	IMPORTANT
Hypernatraemia (follow-up 24 hours; assessed with: >145 mmol sodium)												
1	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	No serious imprecision	None	14/42 (33.3%)	9.5%	RR 3.5 (1.26 to 9.76)	237 more per 1000 (from 25 more to 832 more)	HIGH	IMPORTANT

[a] *Downgraded by 2 increments if the confidence interval crossed both MIDs*

Table 15: Isotonic versus hypotonic solution for routine maintenance in children aged 28 days to 16 years

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Isotonic solution	Hypotonic solution	Relative (95% CI)	Absolute		
Mortality (follow-up 28 days)												
1	Randomised trials	Serious[a]	No serious inconsistency	No serious indirectness	Very serious[b]	None	1/58 (1.7%)	0%	Peto OR 7.14 (0.14 to 359.98)	20 more per 1000 (from 30 fewer to 60 more)	VERY LOW	CRITICAL
Hyponatraemia (assessed with: <135mmol sodium)												
3	Randomised trials	No serious risk of bias	Serious[c]	No serious indirectness	No serious imprecision	None	31/175 (17.7%)	29%	RR 0.5 (0.35 to 0.73)	145 fewer per 1000 (from 78 fewer to 189 fewer)	MODERATE	IMPORTANT
Severe hyponatraemia (assessed with: <130 mmol sodium)												
4	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	No serious imprecision	None	2/233 (0.86%)	3.1%	Peto OR 0.19 (0.07 to 0.5)	-60 fewer per 1000 (from 100 fewer to 20 fewer)	HIGH	IMPORTANT
Hypernatraemia (assessed with: >145 mmol sodium)												
4	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	Very serious[b]	None	8/233 (3.4%)	1.8%	RR 1.16 (0.46 to 2.93)	3 more per 1000 (from 10 fewer to 35 more)	LOW	IMPORTANT
Hypoglycaemia (assessed with: <60 mg/dL glucose)												
1	Randomised trials	Serious[a]	No serious inconsistency	No serious indirectness	Very serious[b]	None	2/31 (6.5%)	9.7%	RR 0.67 (0.12 to 3.72)	32 fewer per 1000 (from 85 fewer to 264 more)	VERY LOW	IMPORTANT

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias*
[b] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*
[c] *The point estimate varies widely across studies, unexplained by subgroup analysis*

Table 16: Isotonic versus hypotonic solution for routine maintenance in children within a specialist unit

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Isotonic solution	Hypotonic solution	Relative (95% CI)	Absolute		
Mortality (follow-up 28 days)												
1	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	Very serious[a]	None	0/31 (0%)	9.4%	Peto OR 0.13 (0.01 to 1.31)	90 fewer per 1000 (from 210 fewer to 20 more)	LOW	CRITICAL
Length of PICU stay (better indicated by lower values)												
1	Randomised trials	Serious[b]	No serious inconsistency	No serious indirectness	Serious[a]	None	n=31	n=32	-	MD 3.5 higher (0.97 lower to 7.97 higher)	LOW	CRITICAL
Hyponatraemia (assessed with: <135mmol sodium)												
3	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	No serious imprecision	None	7/129 (5.4%)	17.5%	RR 0.31 (0.14 to 0.67)	121 fewer per 1000 (from 58 fewer to 150 more)	HIGH	IMPORTANT
Severe hyponatraemia (assessed with: <130 mmol sodium)												
3	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	Serious[a]	None	0/129 (0%)	3.1%	Peto OR 0.14 (0.02 to 0.81)	40 fewer per 1000 (from 80 fewer to 0 fewer)	MODERATE	IMPORTANT
Hypernatraemia (assessed with: >145 mmol sodium)												

3	Randomised trials	No serious risk of bias	Serious inconsistency[c]	No serious indirectness	Very serious[a]	None	2/129 (1.6%)	1.6%	Peto OR 0.7 (0.12 to 4.1)	10 fewer per 1000 (from 40 fewer to 30 more)	VERY LOW	IMPORTANT
Hypoglycaemia (assessed with: <60 mg/dL glucose)												
1	Randomised trials	No serious risk of bias	No serious inconsistency	No serious indirectness	Very serious[a]	None	1/59 (1.7%)	0%	Peto OR 7.91 (0.16 to 399.35)	20 more per 1000 (from 30 fewer to 60 more)	LOW	IMPORTANT

[a] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*
[b] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias*
[c] *The point estimate varies widely across studies, unexplained by subgroup analysis*

I.3.2 Rate of administration for routine maintenance

Table 17: Isotonic crystalloid at normal rate versus restricted rate

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Isotonic crystalloid at normal maintenance rate**	**Isotonic crystalloid at restricted maintenance rate**	**Relative (95% CI)**	**Absolute**		
Hyponatraemia (follow-up 8 hours; assessed with: (sodium level <135mmol/L))												
1	Randomised trials	Serious[a]	No serious inconsistency	No serious indirectness	Very serious[b]	None	1/31 (3.2%)	16.1%	RR 0.2 (0.02 to 1.61)	129 fewer per 1000 (from 158 fewer to 98 more)	VERY LOW	IMPORTANT
Hyponatraemia (follow-up 24 hours; assessed with: (sodium level <135mmol/L))												
1	Randomised trials	Very serious[a]	No serious inconsistency	No serious indirectness	Very serious[b]	None	4/19 (21.1%)	8.3%	RR 2.53 (0.32 to 19.99)	127 more per 1000 (from 56 fewer to 1000 more)	VERY LOW	IMPORTANT

Hypernatraemia (follow-up mean 8 hours; assessed with: (sodium level >145mmol/L))												
1	Randomised trials	Serious[a]	No serious inconsistency	No serious indirectness	Very serious[b]	None	0/31 (0%)	9.7%	Peto OR 0.13 (0.01 to 1.26)	83 fewer per 1000 (from 96 fewer to 22 more)	VERY LOW	IMPORTANT
Hypoglycaemia (follow-up 24 hours)												
1	Randomised trials	Serious[a]	No serious inconsistency	No serious indirectness	Very serious[b]	None	2/31 (6.5%)	0%	Peto OR 7.64 (0.47 to 124.98)	60 more per 1000 (from 0 more to 170 more)	VERY LOW	IMPORTANT

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[b] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*

Table 18: Isotonic crystalloid at normal rate versus restricted rate in a specialist unit

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Isotonic crystalloid at normal maintenance rate**	**Isotonic crystalloid at restricted maintenance rate**	**Relative (95% CI)**	**Absolute**		
Hypoglycaemia (follow-up mean 24 hours)												
1	Randomised trials	Very serious[a]	No serious inconsistency	No serious indirectness	Very serious[b]	None	1/11 (9.1%)	0%	Peto OR 8.86 (0.17 to 452.79)	90 more per 1000 (from 0 more to 300 more)	VERY LOW	IMPORTANT

[a] *Downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[b] *Downgraded by 2 increments if the confidence interval crossed both MIDs*

I.4 IV fluid therapy for replacement and redistribution

Table 19: Ringer's lactate solution versus 0.9% sodium chloride

Quality assessment							Number of patients		Effect		Quality	Importance
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Ringer's lactate solution	0.9% sodium chloride	Relative (95% CI)	Absolute		
Mortality												
1	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	Serious[c]	None	0/10 (0%)	9.1%	Peto OR 0.15 (0 to 7.5)	76 fewer per 1000 (from 91 fewer to 338 more)	VERY LOW	CRITICAL
Length of hospital stay (median) (better indicated by lower values)												
1	Randomised trials	Serious[a]	No serious inconsistency	Serious[b]	Very serious[d]	None	Median 38 hours (IQR 27,50)	Median 51 hours (IQR 36,71)	p=0.03	Not applicable	VERY LOW	CRITICAL

[a] *Downgraded by 1 increment if the majority of the evidence was at high risk of bias, and downgraded by 2 increments if the majority of the evidence was at very high risk of bias*
[b] *55% of patients had cholera*
[c] *Downgraded by 1 increment if the confidence interval crossed 1 MID or by 2 increments if the confidence interval crossed both MIDs*
[d] *Median and IQR given, could not analyse imprecision.*

I.5 Management of hypernatraemia and hyponatraemia developing during IV fluid administration

I.5.1 Management of hypernatraemia

None

I.5.2 Management of hyponatraemia

None

I.6 Training and education of healthcare professionals for management of IV fluid therapy

None