Blood transfusion

NICE quality standard

Draft for consultation

June 2016

Introduction

This quality standard covers the general principles of blood transfusion in adults, young people and children over 1 year old. It does not cover specific conditions that blood transfusion is used for. For more information see the blood transfusion topic overview.

Why this quality standard is needed

Allogeneic blood transfusion is when blood from one person (a donor) is given to someone else (a recipient). Blood donations are generally collected in advance and stored until needed.

Donor blood is processed into blood components. These include red blood cells, platelets, fresh frozen plasma, cryoprecipitate and prothrombin complex concentrate. The blood component used in a transfusion depends on the patient's specific needs, for example if they need red blood cells, platelets, or coagulation factors (for which fresh frozen plasma, cryoprecipitate and/or prothrombin complex concentrate would be used).

Blood transfusions are common in clinical practice. In 2015/16 NHS Blood and Transplant issued 1.59 million units of red blood cells, 271,000 units of platelets, 203,000 units of fresh frozen plasma and 33,000 pools of cryoprecipitate to hospitals in England and North Wales. An estimated 430,000 patients received a red blood cell transfusion in 2002.

There has been an approximate 25% decline in the transfusion of red blood cells in England in the last 15 years. The rate declined from 45.5 to 36 units per

1,000 people between 1999 and 2009, and since then has dropped further to around 30 units per 1,000 people. The use of platelets and fresh frozen plasma also declined in 2015/16.

Despite considerable efforts to ensure the safety of blood transfusions, significant risks remain. The Serious Hazards of Transfusion (SHOT)[1] scheme estimated that in 2014 the risk of transfusion-related death was 5.6 per million blood components issued, and the risk of transfusion-related major morbidity was 63.5 per million blood components issued, although it was not always certain that transfusion was the direct cause of death or major morbidity.

The quality standard is expected to contribute to improvements in the following outcomes:

- blood transfusion rates
- adverse events after blood transfusion
- patient satisfaction with information received before and after blood transfusion
- mortality after blood transfusion.

How this quality standard supports delivery of outcome frameworks

NICE quality standards are a concise set of prioritised statements designed to drive measurable improvements in the 3 dimensions of quality – safety, experience and effectiveness of care – for a particular area of health or care. They are derived from high-quality guidance, such as that from NICE or other sources accredited by NICE. This quality standard, in conjunction with the guidance on which it is based, should contribute to the improvements outlined in the following outcomes framework published by the Department of Health:

- NHS Outcomes Framework 2016–17

Table 1 shows the outcomes, overarching indicators and improvement areas from the frameworks that the quality standard could contribute to achieving.

[1] Serious Hazards of Transfusion (2015) Annual Report

Table 1 NHS Outcomes Framework 2016–17

Domain	Overarching indicators and improvement areas
1 Preventing people from dying prematurely	***Overarching indicators*** 1a Potential Years of Life Lost (PYLL) from causes considered amenable to healthcare i Adults ii Children and young people
3 Helping people to recover from episodes of ill health or following injury	**Improving recovery from injuries and trauma** *3.3 Survival from major trauma*
4 Ensuring that people have a positive experience of care	***Overarching indicators*** 4b Patient experience of hospital care *4d Patient experience characterised as poor or worse* *ii Hospital care*
5 Treating and caring for people in a safe environment and protecting them from avoidable harm	***Overarching indicators*** *5a Deaths attributable to problems in healthcare* *5b Severe harm attributable to problems in healthcare*
Indicators in italics are in development	

Safety and people's experience of care

Ensuring that care is safe and that people have a positive experience of care is vital in a high-quality service. It is important to consider these factors when planning and delivering services relevant to blood transfusion.

NICE has developed guidance and an associated quality standard on patient experience in adult NHS services (see the NICE pathway on patient experience in adult NHS services), which should be considered alongside this quality standard. This specifies that people receiving care should be treated with dignity, have opportunities to discuss their preferences, and be supported to understand their options and make fully informed decisions. It also covers the provision of information to people using services. Quality statements on these aspects of patient experience are not usually included in topic-specific quality standards. However, recommendations in the development sources for quality standards that affect people's experience of using services and are specific to the topic are considered during quality statement development.

Coordinated services

The quality standard for blood transfusion specifies that services should be commissioned from and coordinated across all relevant agencies encompassing the

whole blood transfusion care pathway. A person-centred, integrated approach to providing services is fundamental to delivering high-quality care to people receiving blood transfusions.

The Health and Social Care Act 2012 sets out a clear expectation that the care system should consider NICE quality standards in planning and delivering services, as part of a general duty to secure continuous improvement in quality. Commissioners and providers of health and social care should refer to the library of NICE quality standards when designing high-quality services. Other quality standards that should also be considered when choosing, commissioning or providing a high-quality blood transfusion service are listed in related NICE quality standards.

Training and competencies

The quality standard should be read in the context of national and local guidelines on training and competencies. All health, public health and social care practitioners involved in assessing, caring for and treating people who receive blood transfusions should have sufficient and appropriate training and competencies to deliver the actions and interventions described in the quality standard. Quality statements on staff training and competency are not usually included in quality standards. However, recommendations in the development source on specific types of training for the topic that exceed standard professional training are considered during quality statement development.

Role of families and carers

Quality standards recognise the important role families and carers have in supporting people who are receiving blood transfusions. If appropriate, healthcare professionals should ensure that family members and carers are involved in the decision-making process about investigations, treatment and care.

List of quality statements

Statement 1. People with iron deficiency anaemia are offered oral iron before and after surgery.

Statement 2. Adults who are having surgery and expected to have moderate blood loss are offered tranexamic acid.

Statement 3. People who receive a single-unit red blood cell transfusion, or an equivalent volume, are clinically reassessed and have their haemoglobin levels checked after the transfusion.

Statement 4. People with a platelet count below 10×109 per litre who are not bleeding or having invasive procedures or surgery are offered prophylactic platelet transfusions.

Statement 5. People who may have or who have had a transfusion are given verbal and written information about the benefits and risks of transfusion.

Questions for consultation

Questions about the quality standard

Question 1 Does this draft quality standard accurately reflect the key areas for quality improvement?

Question 2 Are local systems and structures in place to collect data for the proposed quality measures? If not, how feasible would it be for these to be put in place?

Question 3 Do you have an example from practice of implementing the NICE guideline that underpins this quality standard? If so, please submit your example to the NICE local practice collection on the NICE website. Examples of using NICE quality standards can also be submitted.

Question 4 Do you think each of the statements in this draft quality standard would be achievable by local services given the net resources needed to deliver them? Please describe any resource requirements that you think would be necessary for any treatment. Please describe any potential cost savings or opportunities for disinvestment.

Questions about the individual quality statements

Question 5 For draft quality statement 4: Is there evidence that people are being given prophylactic platelet transfusions unnecessarily when they have a platelet count above 10×10^9, are not having invasive procedures or surgery, and have none of the contraindications?

Question 6 For draft quality statement 5: Is this area of quality improvement sufficiently specific to blood transfusion to merit a statement?

Quality statement 1: Oral iron

Quality statement

People with iron-deficiency anaemia are offered oral iron before and after surgery.

Rationale

Treating iron deficiency with oral iron can prevent the need for blood transfusion. This avoids serious risks associated with blood transfusion, for example infection, fluid overload and incorrect blood transfusions being given. It may also reduce the length of hospital stays and the cost to the NHS.

Quality measures

Structure

a) Evidence of local arrangements to ensure people with iron-deficiency anaemia are offered oral iron before surgery.

Data source: Local data collection.

b) Evidence of local arrangements to ensure that people with iron-deficiency anaemia are offered oral iron after surgery.

Data source: Local data collection.

Process

a) Proportion of people with iron-deficiency anaemia who receive oral iron before surgery.

Numerator – the number in the denominator who receive oral iron before surgery.

Denominator – the number of people with iron-deficiency anaemia who are undergoing surgery.

Data source: Local data collection.

b) Proportion of people with iron-deficiency anaemia who receive oral iron after surgery.

Numerator – the number in the denominator who are offered oral iron.

Denominator – the number of people with iron-deficiency anaemia who have had surgery.

Data source: Local data collection.

Outcome

a) Blood transfusion rates after surgery.

Data source: Local data collection.

b) Incidence of infections after surgery.

Data source: Local data collection.

c) Incidence of serious adverse events after surgery.

Data source: Local data collection.

d) Length of stay in hospital after surgery.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers (such as secondary care services) ensure that systems are in place to offer oral iron before and after surgery for people with iron-deficiency anaemia.

Healthcare professionals (such as doctors, nurses and blood transfusion specialists) offer oral iron before and after surgery to people with iron-deficiency anaemia.

Commissioners (such as clinical commissioning groups) commission services that offer oral iron before and after surgery for people with iron-deficiency anaemia.

What the quality statement means for patients and carers

People who are having an operation and have anaemia caused by a lack of iron should be offered iron (usually as tablets) before and after the operation.

Source guidance

- Blood transfusion (2015) NICE guideline NG24, recommendation 1.1.2

Quality statement 2: Tranexamic acid for adults

Quality statement

Adults who are having surgery and expected to have moderate blood loss are offered tranexamic acid.

Rationale

Tranexamic acid can reduce the need for blood transfusion in adults having surgery. This avoids serious risks associated with blood transfusion, such as infection. It may also reduce the length of hospital stays and the cost to the NHS.

Quality measures

Structure

Evidence of local arrangements to ensure adults who are having surgery and expected to have moderate blood loss are offered tranexamic acid.

Data source: Local data collection.

Process

Proportion of adults undergoing surgery and expected to have moderate blood loss who receive tranexamic acid.

Numerator – The number of adults in the denominator who receive tranexamic acid.

Denominator – The number of adults who are undergoing surgery and expected to have moderate blood loss.

Data source: Local data collection.

Outcome

a) Blood transfusion rates after surgery.

Data source: Local data collection.

b) Mortality after surgery.

Data source: Local data collection.

c) Incidence of infections after surgery.

Data source: Local data collection.

d) Incidence of serious adverse events after surgery.

Data source: Local data collection.

e) Length of stay in hospital after surgery.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers (such as secondary care services) ensure that systems are in place to offer tranexamic acid for adults who are having surgery and are expected to have moderate blood loss.

Healthcare professionals (such as doctors, nurses and blood transfusion specialists) offer tranexamic acid to adults who are having surgery and are expected to have moderate blood loss.

Commissioners (such as clinical commissioning groups) commission specialist services that offer tranexamic acid for adults who are having surgery and are expected to have moderate blood loss.

What the quality statement means for patients and carers

Adults who are expected to lose more than 500 millilitres of blood during an operation are offered tranexamic acid. This helps blood to clot better and can stop people losing too much blood during the operation.

Source guidance

- Blood transfusion (2015) NICE guideline NG24, recommendation 1.1.5

Definitions of terms used in this quality statement

Expected moderate blood loss

Adults who are expected to have blood loss greater than 500 ml in adults as recorded on the World Health Organisation surgical safety checklist. [Blood transfusion (NICE guideline NG24)]

Quality statement 3: Reassessment after single-unit red blood cell transfusions

Quality statement

People who receive a single-unit red blood cell transfusion, or an equivalent volume, are clinically reassessed and have their haemoglobin levels checked after the transfusion.

Rationale

Restrictive red blood cell transfusion thresholds are recommended for people who need red blood cell transfusions and who do not have major haemorrhage or acute coronary syndrome, or need regular transfusions for chronic anaemia. Clinical reassessment and measurement of haemoglobin levels after a single-unit red blood cell transfusion helps healthcare professionals to decide whether further transfusions are needed. It can also help to improve the safety of blood transfusions as any adverse events (such as allergic reactions) can be identified and treated as early as possible and even prevented from happening.

Quality measures

Structure

a) Evidence of local arrangements to ensure that people who receive a single-unit red blood cell transfusion, or equivalent volumes, are clinically reassessed after the transfusion.

Data source: Local data collection.

b) Evidence of local arrangements to ensure that people who receive a single-unit red blood cell transfusion, or equivalent volumes, have their haemoglobin levels checked after the transfusion.

Data source: Local data collection.

Process

a) Proportion of single-unit red blood cell transfusions, or equivalent volumes, where a clinical reassessment of the person is carried out after the transfusion.

Numerator – The number in the denominator where a clinical reassessment is carried out after the transfusion.

Denominator – The number of single-unit red blood cell transfusions, or equivalent volumes.

Data source: Local data source.

b) Proportion of single-unit red blood cell transfusions, or equivalent volumes, where the haemoglobin level of the person is checked after the transfusion.

Numerator – The number in the denominator where the haemoglobin level of the person is checked after the transfusion.

Denominator – The number of single-unit red blood cell transfusions, or equivalent volumes.

Data source: Local data collection.

Outcome

a) Incidence of infections after a blood transfusion.

Data source: Local data collection.

b) Incidence of serious adverse events after a blood transfusion.

Data source: Local data collection.

c) Length of stay in hospital after a blood transfusion.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers (such as secondary care services) ensure that systems are in place to clinically reassess and check the haemoglobin levels of people who receive a single-unit red blood cell transfusion (or an equivalent volume) after the transfusion.

Healthcare professionals (such as doctors, nurses and specialists) ensure that people who receive a single-unit red blood cell transfusion (or an equivalent volume) are clinically reassessed and have their haemoglobin levels checked after the transfusion.

Commissioners (such as clinical commissioning groups) commission specialist services that clinically reassess and check the haemoglobin levels of people who receive a single-unit red blood cell transfusion (or an equivalent volume) after the transfusion.

What the quality statement means for patients and carers

People who receive a single-unit red blood cell transfusion or a transfusion based on their weight (for children and for adults with a low weight) have an assessment that includes a check of their haemoglobin levels, to see whether they need more transfusions.

Source guidance

- Blood transfusion (2015) NICE guideline NG24, recommendation 1.2.6

Definitions of terms used in this quality statement

Restrictive red blood cell transfusion threshold and targets

The suggested threshold for red blood cell transfusions is 70 g/litre, and the suggested haemoglobin concentration target is 70–90 g/litre after transfusion. [Blood transfusion (NICE guideline NG24)]

Equivalent volume

Red blood cell transfusion volumes should be calculated based on body weight for children, and for adults with low body weight. [Blood transfusion (NICE guideline NG24)]

Quality statement 4: Prophylactic platelet transfusions

Quality statement

People with a platelet count below 10×10^9 per litre who are not bleeding or having invasive procedures or surgery are offered prophylactic platelet transfusions.

Rationale

Platelet transfusions may be given when the platelet count falls below 10×10^9 per litre, to reduce the risk of bleeding. The risks associated with blood transfusions outweigh the benefits for people with a platelet count above 10×10^9 per litre if they are not bleeding or having invasive procedures or surgery. Prophylactic platelet transfusions can therefore help to prevent serious adverse events associated with transfusion and improve safety for patients.

Quality measures

Structure

Evidence of local arrangements to ensure people with a platelet count below 10×10^9 per litre who are not bleeding or having invasive procedures or surgery are offered prophylactic platelet transfusions.

Data source: Local data collection.

Process

Proportion of presentations where the person has a platelet count below 10×10^9 per litre and is not bleeding or having invasive procedures or surgery in which prophylactic platelet transfusions are received.

Numerator – the number in the denominator in which a prophylactic platelet transfusion is received.

Denominator – the number of presentations in which the person has a platelet count below 10×10^9 per litre and is not bleeding or having an invasive procedure or surgery.

Data source: Local data collection.

Outcome

a) Risk of bleeding after a blood transfusion.

Data source: Local data collection.

b) Incidence of infections after a blood transfusion.

Data source: Local data collection.

c) Incidence of serious adverse events after a blood transfusion.

Data source: Local data collection.

d) Length of stay in hospital after a blood transfusion.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers (such as secondary care services) ensure that systems are in place to offer prophylactic platelet transfusions for people with a platelet count below 10×10^9 per litre who are not bleeding or having invasive procedures or surgery.

Healthcare professionals (such as doctors, nurses and specialists) ensure that people are offered prophylactic platelet transfusions if they have a platelet count below 10×10^9 per litre and are not bleeding or having invasive procedures or surgery.

Commissioners (such as clinical commissioning groups) ensure that people are offered prophylactic platelet transfusions if they have a platelet count below 10×10^9 per litre and are not bleeding or having invasive procedures or surgery.

What the quality statement means for patients and carers

People whose blood is clotting too slowly and who do not have an operation planned are offered platelet transfusions to stop problems from starting and to reduce their risk of bleeding (a prophylactic transfusion).

Source guidance

- Blood transfusion (2015) NICE guideline NG24, recommendation 1.3.3.

Definitions of terms used in this quality statement

Contraindications

People with any of the following conditions should not routinely be offered prophylactic platelet transfusions:

- chronic bone marrow failure
- autoimmune thrombocytopenia
- heparin-induced thrombocytopenia
- thrombotic thrombocytopenic purpura.

[Blood transfusion (NICE guideline NG24)]

Question for consultation

Is there evidence that people are being given prophylactic platelet transfusions unnecessarily when they have a platelet count above 10×10^9, are not having invasive procedures or surgery, and have none of the contraindications?

Quality statement 5: Patient information

Quality statement

People who may have or who have had a transfusion are given verbal and written information about the benefits and risks of transfusion.

Rationale

It is important that people fully understand the benefits and risks of a blood transfusion, so that they can give informed consent. This information can also help people decide if they want to receive a transfusion. Helping people to understand the transfusion process and its implications improves their experience of it.

Quality measures

Structure

Evidence of local arrangements to ensure that people who may have, or who have received, a transfusion are given verbal and written information explaining the risks and benefits.

Data source: Local data collection.

Process

a) Proportion of people who may have a transfusion who are given verbal and written information explaining the risks and benefits.

Numerator – the number in the denominator who are given verbal and written information explaining the risks and benefits.

Denominator – the number of people who may have a transfusion.

Data source: Local data collection.

b) Proportion of people who have received a transfusion who are given verbal and written information explaining the risks and benefits.

Numerator – the number in the denominator who are given verbal and written information explaining the risks and benefits.

Denominator – the number of people who have received a transfusion.

Data source: Local data collection.

Outcome

Patient satisfaction with information they are given about blood transfusion.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers (such as secondary care services) ensure that systems are in place to give verbal and written information explaining the risks and benefits to people who may have or who have had a transfusion.

Healthcare professionals (such as doctors, nurses and specialists) give verbal and written information explaining the risks and benefits to people who may have or who have had a transfusion.

Commissioners (such as clinical commissioning groups) commission services that give verbal and written information explaining the risks and benefits to people who may have or who have had a transfusion.

What the quality statement means for patients and carers

People who may need a blood transfusion, or who have had one unexpectedly (for example because of serious bleeding during an operation), have the risks and benefits explained to them verbally and in writing.

Source guidance

- Blood transfusion (2015) NICE guideline NG24, recommendation 1.8.1

Definitions of terms used in this quality statement

People who may have a transfusion

People who have had a blood sample taken and sent to the blood transfusion laboratory for grouping and/or antibody screening. [Expert consensus]

Verbal and written information

People who may have or have had a transfusion should be given verbal and written information explaining:

- the reason for the transfusion
- the risks and benefits
- the transfusion process
- any transfusion needs specific to them
- any alternatives that are available, and how they might reduce their need for a transfusion
- that they are no longer eligible to donate blood. [Blood transfusion (NICE guideline NG24)]

Equality and diversity considerations

Everyone should have access to information that they understand, so that they can be fully informed of the risks and benefits and aware that they will not be able to donate blood after a transfusion. If needed, information should be provided in an accessible format (particularly for people with physical, sensory or learning disabilities and people who do not speak or read English).

Question for consultation

Is this area of quality improvement sufficiently specific to blood transfusion to merit a statement?

Status of this quality standard

This is the draft quality standard released for consultation from 23 June 2016 to 10 August 2016. It is not NICE's final quality standard on blood transfusion. The statements and measures presented in this document are provisional and may change after consultation with stakeholders.

Comments on the content of the draft standard must be submitted by 5pm on 10 August 2016. All eligible comments received during consultation will be reviewed by the quality standards advisory committee and the quality statements and measures will be refined in line with the quality standards advisory committee's considerations. The final quality standard will be available on the NICE website from June 2016.

Using the quality standard

Quality measures

The quality measures accompanying the quality statements aim to improve the structure, process and outcomes of care in areas identified as needing quality improvement. They are not a new set of targets or mandatory indicators for performance management.

We have indicated if current national indicators exist that could be used to measure the quality statements. These include indicators developed by the Health and Social Care Information Centre through its Indicators for Quality Improvement Programme. If there is no national indicator that could be used to measure a quality statement, the quality measure should form the basis for audit criteria developed and used locally.

See NICE's What makes up a NICE quality standard? for further information, including advice on using quality measures.

Levels of achievement

Expected levels of achievement for quality measures are not specified. Quality standards are intended to drive up the quality of care, and so achievement levels of

100% should be aspired to (or 0% if the quality statement states that something should not be done). However, NICE recognises that this may not always be appropriate in practice, taking account of safety, choice and professional judgement, and therefore desired levels of achievement should be defined locally.

NICE's quality standard service improvement template helps providers to make an initial assessment of their service compared with a selection of quality statements. It includes assessing current practice, recording an action plan and monitoring quality improvement. This tool is updated monthly to include new quality standards.

Using other national guidance and policy documents

Other national guidance and current policy documents have been referenced during the development of this quality standard. It is important that the quality standard is considered alongside the documents listed in development sources.

Diversity, equality and language

During the development of this quality standard, equality issues will be considered and equality assessments will be available.

Good communication between health, public health and social care practitioners and people receiving a blood transfusion, and their families or carers (if appropriate), is essential. Treatment, care and support, and the information given about it, should be both age-appropriate and culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English. People receiving a blood transfusion and their families or carers (if appropriate) should have access to an interpreter or advocate if needed.

Commissioners and providers should aim to achieve the quality standard in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this quality standard should be interpreted in a way that would be inconsistent with compliance with those duties.

Development sources

Further explanation of the methodology used can be found in the quality standards process guide.

Evidence sources

The documents below contain recommendations from NICE guidance or other NICE-accredited recommendations that were used by the quality standards advisory committee to develop the quality standard statements and measures.

- Blood transfusion (2015) NICE guideline NG24.

Policy context

It is important that the quality standard is considered alongside current policy documents, including:

- Department of Health (2014) Platelet transfusion infection: risk review
- Royal College of Nursing (2013) Right blood, right patient, right time: RCN guidance for improving transfusion practice
- Public Health England (2013) Safe supplies: annual review
- United Kingdom Blood Transfusion Services (2013) Handbook of transfusion medicine
- NHS Blood and Transplant (2012) National comparative audit of blood transfusion: Annual report 2011/12)
- National Patient Safety Agency (2006) Right patient, right blood: advice for safer blood transfusions

Definitions and data sources for the quality measures

- Blood transfusion (2015) NICE guideline NG24

Related NICE quality standards

Published

- Patient experience in adult NHS services (2012) NICE quality standard 15

Quality standards advisory committee and NICE project team

Quality standards advisory committee

This quality standard has been developed by Quality Standards Advisory Committee 2. Membership of this committee is as follows:

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About this quality standard

NICE quality standards describe high-priority areas for quality improvement in a defined care or service area. Each standard consists of a prioritised set of specific, concise and measurable statements. NICE quality standards draw on existing NICE or NICE-accredited guidance that provides an underpinning, comprehensive set of recommendations, and are designed to support the measurement of improvement.

The methods and processes for developing NICE quality standards are described in the quality standards process guide.

This quality standard has been incorporated into the NICE pathway on blood transfusion.

NICE produces guidance, standards and information on commissioning and providing high-quality healthcare, social care, and public health services. We have agreements to provide certain NICE services to Wales, Scotland and Northern Ireland. Decisions on how NICE guidance and other products apply in those countries are made by ministers in the Welsh government, Scottish government, and Northern Ireland Executive. NICE guidance or other products may include references to organisations or people responsible for commissioning or providing care that may be relevant only to England.

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