

# Urinary tract infection in children and young people

Quality standard

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[www.nice.org.uk/guidance/qs36](https://www.nice.org.uk/guidance/qs36)

# Contents

Introduction .....	4
Why this quality standard is needed .....	4
How this quality standard supports delivery of outcome frameworks .....	4
Coordinated services.....	5
List of quality statements .....	6
Quality statement 1: Presentation with unexplained fever of 38°C or higher .....	7
Quality statement.....	7
Rationale.....	7
Quality measures .....	7
What the quality statement means for different audiences.....	8
Source guidance .....	8
Definitions of terms used in this quality statement .....	8
Quality statement 2: History and examination – recording of risk factors .....	10
Quality statement.....	10
Rationale.....	10
Quality measures .....	10
What the quality statement means for different audiences .....	11
Source guidance .....	11
Definitions of terms used in this quality statement .....	11
Quality statement 3: Laboratory reporting – differentiation of E. coli and non-E. coli organisms....	13
Quality statement.....	13
Rationale.....	13
Quality measures .....	13
What the quality statement means for different audiences .....	14
Source guidance .....	14
Definitions of terms used in this quality statement .....	14
Quality statement 4: Information about recognising re-infection.....	15

Quality statement.....	15
Rationale.....	15
Quality measure .....	15
What the quality statement means for different audiences .....	16
Source guidance .....	16
Definitions of terms used in this quality statement .....	16
Equality and diversity considerations.....	17
Using the quality standard.....	18
Quality measures .....	18
Levels of achievement .....	18
Using other national guidance and policy documents.....	18
Diversity, equality and language .....	19
Development sources.....	20
Evidence sources .....	20
Policy context .....	20
Related NICE quality standards .....	21
Quality Standards Advisory Committee and NICE project team .....	22
Quality Standards Advisory Committee.....	22
NICE project team .....	22
Update information.....	24
About this quality standard.....	25

This standard is based on CG54.

This standard should be read in conjunction with QS15, QS90, QS64, QS70, QS75, QS112 and QS195.

## Introduction

This quality standard covers the care of infants, children and young people under 16 years with a first or recurrent upper or lower urinary tract infection and without known underlying uropathy. For more information see the [topic overview](#).

## Why this quality standard is needed

Urinary tract infection is a common bacterial infection in infants, children and young people. A urinary tract infection is defined by a combination of clinical features and the presence of bacteria in the urine. Around 1 in 10 girls and 1 in 30 boys will have had a urinary tract infection by the age of 16 years.

Making the diagnosis can be difficult because the presenting symptoms or signs (fever, irritability and vomiting) are non-specific and are commonly seen in many childhood viral illnesses, particularly in younger children. A severe infection can make a child extremely unwell and sometimes have serious consequences; even minor infections can be distressing. Repeated episodes of acute urinary tract infection are distressing to infants, children and young people, and their parents or carers.

Although most infants, children and young people recover promptly from a urinary tract infection and have no long-term complications, there is a small subgroup at risk of significant morbidity.

Prompt and accurate diagnosis of urinary tract infection is essential, and it is important to recognise and treat recurrent infection.

## How this quality standard supports delivery of outcome frameworks

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. They draw on existing guidance, which provides an underpinning, comprehensive set of recommendations, and are designed to support the measurement of improvement. The 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 2013 to 2014](#)
- [Improving outcomes and supporting transparency: a public health outcomes framework for England 2013 to 2016.](#)

## Coordinated services

The quality standard for urinary tract infection in infants, children and young people under 16 specifies that services should be commissioned from and coordinated across all relevant agencies encompassing the whole urinary tract infection care pathway for this population. A person-centred, integrated approach to provision of services is fundamental to delivering high-quality care to infants, children and young people with a urinary tract infection.

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 service for infants, children and young people with a urinary tract infection 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 healthcare practitioners involved in assessing, caring for and treating infants, children and young people with a urinary tract infection should have sufficient and appropriate training and competencies to deliver the actions and interventions described in the quality standard.

## List of quality statements

Statement 1 Infants, children and young people presenting with unexplained fever of 38°C or higher have a urine sample tested within 24 hours.

Statement 2 Infants, children and young people with a urinary tract infection have risk factors for urinary tract infection and serious underlying pathology recorded as part of their history and examination.

Statement 3 Infants, children and young people with a urinary tract infection caused by coliform bacteria have results of microbiology laboratory testing differentiated by *Escherichia coli* (*E. coli*) or non-*E. coli* organisms.

Statement 4 Children and young people who have had a urinary tract infection are given information about how to recognise re-infection and to seek medical advice straight away.

# Quality statement 1: Presentation with unexplained fever of 38°C or higher

## Quality statement

Infants, children and young people presenting with unexplained fever of 38°C or higher have a urine sample tested within 24 hours.

## Rationale

It is important that a urinary tract infection is considered as a cause of feverish illness in infants, children and young people. When an infant, child or young person (under 16 years) presents to a healthcare practitioner with a temperature of 38°C or higher, and there is no obvious source of the infection, a urine sample should be tested within 24 hours to ensure prompt diagnosis and antibiotic treatment if appropriate.

## Quality measures

### Structure

Evidence of local arrangements to ensure that infants, children and young people (under 16 years) who present with unexplained fever of 38°C or higher have a urine sample tested within 24 hours.

Data source: Local data collection.

### Process

Proportion of infants, children and young people who present with unexplained fever of 38°C or higher who have a urine sample tested within 24 hours.

Numerator – the number of people in the denominator who have a urine sample tested within 24 hours.

Denominator – the number of infants, children and young people (under 16 years) presenting with unexplained fever of 38°C or higher.

Data source: Local data collection.

## What the quality statement means for different audiences

**Service providers** ensure that systems are in place for infants, children and young people presenting with unexplained fever of 38°C or higher to have a urine sample tested within 24 hours.

**Healthcare practitioners** ensure that infants, children and young people presenting with unexplained fever of 38°C or higher have a urine sample tested within 24 hours.

**Commissioners** ensure that they commission services for infants, children and young people presenting with unexplained fever of 38°C or higher that carry out testing of urine samples within 24 hours.

**Infants, children and young people under 16** with a temperature of 38°C or higher and no obvious infection have a urine sample tested within 24 hours of seeing a healthcare professional.

## Source guidance

Urinary tract infection in under 16s: diagnosis and management. NICE guideline CG54 (2018), recommendations 1.1.1.1, 1.1.5.2, 1.1.5.3, 1.1.5.4 and 1.1.5.5

## Definitions of terms used in this quality statement

Although all infants, children and young people with symptoms and signs suggesting urinary tract infection should have a urine sample tested for infection, this statement relates specifically to those presenting with unexplained fever of 38°C or higher.

A urinary tract infection may be the cause of fever if there is no obvious source of infection and there is no alternative diagnosis.

The NICE guideline on urinary tract infection in under 16s recommends urine-testing strategies according to 3 separate age groups. The urine-testing strategies are grouped as follows:

- infants younger than 3 months
- infants and children 3 months or older but younger than 3 years



- children 3 years or older.

Assess the risk of serious illness in line with the [NICE guideline on fever in under 5s](#) to ensure appropriate urine tests and interpretation, both of which depend on the child's age and risk of serious illness.

## Quality statement 2: History and examination – recording of risk factors

### Quality statement

Infants, children and young people with a urinary tract infection have risk factors for urinary tract infection and serious underlying pathology recorded as part of their history and examination.

### Rationale

Presenting symptoms, findings on examination, results of urine testing and knowledge of risk factors are all important when a diagnosis of urinary tract infection is being considered. Recording of risk factors is a cumulative process as part of the history and examination of an infant, child or young person with a urinary tract infection. Recording of risk factors is also important in order to identify whether onward referral and further investigations will be needed.

### Quality measures

#### Structure

Evidence of local arrangements to ensure that infants, children and young people (under 16 years) with a urinary tract infection have risk factors for urinary tract infection and serious underlying pathology recorded as part of their history and examination.

**Data source:** Local data collection.

#### Process

Proportion of infants, children and young people with a urinary tract infection who have risk factors for urinary tract infection and serious underlying pathology recorded as part of their history and examination.

**Numerator** – the number of people in the denominator who have risk factors for urinary tract infection and serious underlying pathology recorded as part of their history and examination.

**Denominator** – the number of infants, children and young people (under 16 years) with a urinary

tract infection.

Data source: Local data collection.

## What the quality statement means for different audiences

**Service providers** ensure that systems are in place for infants, children and young people with a urinary tract infection to have risk factors for urinary tract infection and serious underlying pathology recorded as part of their history and examination.

**Healthcare practitioners** ensure that infants, children and young people with a urinary tract infection have risk factors for urinary tract infection and serious underlying pathology recorded as part of their history and examination.

**Commissioners** ensure that they commission services for infants, children and young people with a urinary tract infection where risk factors for urinary tract infection and serious underlying pathology are recorded as part of their history and examination.

**Infants, children and young people under 16** with a urinary tract infection have any factors that may put them at risk of urinary tract infection and of more serious underlying conditions recorded in their patient notes.

## Source guidance

Urinary tract infection in under 16s: diagnosis and management. NICE guideline CG54 (2018), recommendation 1.1.7.1 (key priority for implementation)

## Definitions of terms used in this quality statement

The NICE guideline on urinary tract infection in under 16s recommends that the following risk factors for a urinary tract infection (UTI) and serious underlying pathology should be recorded as part of history and examination on confirmed UTI:

- poor urine flow
- history suggesting previous UTI or confirmed previous UTI
- recurrent fever of uncertain origin

- antenatally-diagnosed renal abnormality
- family history of vesicoureteric reflux (VUR) or renal disease
- constipation
- dysfunctional voiding
- enlarged bladder
- abdominal mass
- evidence of spinal lesion
- poor growth
- high blood pressure.

# Quality statement 3: Laboratory reporting – differentiation of *E. coli* and non-*E. coli* organisms

## Quality statement

Infants, children and young people with a urinary tract infection caused by coliform bacteria have results of microbiology laboratory testing differentiated by *Escherichia coli* (*E. coli*) or non-*E. coli* organisms.

## Rationale

Most urine infections are caused by *E. coli* bacteria, which belong to a group of bacteria called coliforms.

If a urinary tract infection is caused by a non-*E. coli* coliform or any other type of bacteria, there is an increased risk of serious underlying pathology. NICE guidance recommends that infants, children and young people (under 16 years) with atypical urinary tract infection (which includes infection with non-*E. coli* organisms) should have ultrasound of the urinary tract during the acute infection. It is therefore important that laboratory test reports differentiate between *E. coli* and non-*E. coli* organisms to identify whether further investigations are needed.

## Quality measures

### Structure

Evidence of local arrangements to ensure that microbiology laboratories detecting coliform bacteria as a cause of a urinary tract infection report results differentiated by *E. coli* or non-*E. coli* organisms.

Data source: Local data collection.

### Process

Proportion of infants, children and young people with a urinary tract infection caused by coliform bacteria who have results of microbiology laboratory testing differentiated by *E. coli* or non-*E. coli* organisms.

**Numerator** – the number of people in the denominator who have results of microbiology laboratory testing differentiated by *E. coli* or non-*E. coli* organisms.

**Denominator** – the number of infants, children and young people (under 16 years) with a urinary tract infection caused by coliform bacteria.

**Data source:** Local data collection.

## What the quality statement means for different audiences

**Service providers** ensure that systems are in place for infants, children and young people with a urinary tract infection caused by coliform bacteria to have results of microbiology laboratory testing differentiated by *E. coli* or non-*E. coli* organisms.

**Healthcare practitioners** ensure that infants, children and young people with a urinary tract infection caused by coliform bacteria have results of microbiology laboratory testing differentiated by *E. coli* or non-*E. coli* organisms.

**Commissioners** ensure that they commission services for infants, children and young people with a urinary tract infection caused by coliform bacteria that report results of microbiology laboratory testing differentiated by *E. coli* or non-*E. coli* organisms.

**Infants, children and young people under 16** with a urinary tract infection caused by coliform bacteria (a type of bacteria that usually live in the digestive system) have laboratory test results that show whether these bacteria were *E. coli* or not, to identify whether further investigations are needed.

## Source guidance

Derived from definitions of atypical urinary tract infection as outlined in the [NICE guideline on urinary tract infection in under 16s: diagnosis and management](#).

## Definitions of terms used in this quality statement

The [NICE guideline on urinary tract infection in under 16s](#) specifies atypical causes of urinary tract infection, and includes non-*E. coli* organisms as an atypical cause in infants, children and young people.

# Quality statement 4: Information about recognising re-infection

## Quality statement

Children and young people who have had a urinary tract infection are given information about how to recognise re-infection and to seek medical advice straight away.

## Rationale

Some children and young people will experience a recurrence of urinary tract infection, and it is important that such infections are recognised and treated quickly to reduce the risk of complications.

Children and young people (and parents and carers) should be aware of the importance of seeking medical advice straight away if they think there is another urinary tract infection.

## Quality measure

### Structure

Evidence of local arrangements to ensure that children and young people (under 16 years) who have had a urinary tract infection are given information about how to recognise re-infection and to seek medical advice straight away.

**Data source:** Local data collection

### Process

Proportion of children and young people who have had a urinary tract infection who receive information about how to recognise re-infection and to seek medical advice straight away.

**Numerator** – the number of people in the denominator who receive information about how to recognise re-infection and to seek medical advice straight away.

**Denominator** – the number of children and young people (under 16 years) who have had a urinary

tract infection.

**Data source:** Local data collection.

## Outcome

Patient satisfaction with information received about how to recognise re-infection and to seek medical advice straight away.

**Data source:** Local data collection.

## What the quality statement means for different audiences

**Service providers** ensure that systems are in place to give children and young people who have had a urinary tract infection information about how to recognise re-infection and to seek medical advice straight away.

**Healthcare practitioners** give information to children and young people who have had a urinary tract infection, and/or their parents or carers, about how to recognise re-infection and to seek medical advice straight away.

**Commissioners** ensure that they commission services in which children and young people who have had a urinary tract infection, and/or their parents or carers, are given information about how to recognise re-infection and to seek medical advice straight away.

**Children and young people under 16** who have had a urinary tract infection, and/or their parents or carers, are given information about how to recognise if they have another infection and to seek medical advice straight away.

## Source guidance

[Urinary tract infection in under 16s: diagnosis and management. NICE guideline CG54 \(2018\), recommendation 1.6.1.2](#)

## Definitions of terms used in this quality statement

The healthcare practitioner (for example, a GP or hospital paediatrician) should give children and



young people who have had a confirmed urinary tract infection, and/or their parents or carers, information and advice about possible re-infection and the importance of seeking medical advice straight away if there are signs of another urinary tract infection.

## Equality and diversity considerations

Treatment and care, and the information given about it, should be 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.

Children and young people with a suspected or confirmed urinary tract infection, or their parents or carers, should have access to an interpreter or advocate if needed.

## Using the quality standard

### Quality measures

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

See [NICE's how to use quality standards](#) 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.

## 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 by commissioners, providers, health and social care practitioners, patients, service users and carers alongside the documents listed in [development sources](#).

## Diversity, equality and language

During the development of this quality standard, equality issues have been considered and [equality assessments for this quality standard](#) are available.

Good communication between healthcare practitioners and children and young people with a urinary tract infection, and/or their parents or carers, 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. Children and young people with a urinary tract infection, and/or their parents or carers, should have access to an interpreter or advocate if needed.

Commissioners and providers are reminded that it is their responsibility to implement the guidance, 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 guidance 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](#) on the NICE website.

## Evidence sources

The document below contains recommendations from NICE guidance that was used by the Quality Standards Advisory Committee to develop the quality standard statements and measures.

[Urinary tract infection in under 16s: diagnosis and management. NICE guideline CG54 \(2018\)](#)

## Policy context

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

- [Department of Health. Continence exemplar \(2007\)](#)
- [Department of Health. National service framework for children, young people and maternity services \(2004\)](#)

## Related NICE quality standards

- [Antimicrobial stewardship. NICE quality standard 121 \(2016\)](#)
- [Bedwetting in children and young people. NICE quality standard 70 \(2014\)](#)
- [Fever in under 5s. NICE quality standard 64 \(2014\)](#)

# Quality Standards Advisory Committee and NICE project team

## Quality Standards Advisory Committee

This quality standard has been developed by Quality Standards Advisory Committee 1. For further information about the standing members of this committee see our [webpage on quality standard advisory committees](#). The following specialist members joined the committee to develop this quality standard:

**Dr Lyda Jadresic**

Consultant paediatrician, Gloucestershire Royal Hospital

**Dr James Larcombe**

General practitioner, Sedgefield

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Consultant paediatric nephrologist, Great Ormond Street Hospital, London

**Dr Sue Vernon**

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## NICE project team

**Dr Dylan Jones**

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## Update information

**September 2017:** The source guidance information and definitions section for statement 1 were updated to ensure alignment with the updated [NICE guideline on urinary tract infection in under 16s](#).

### Minor changes since publication

**November 2019:** The link to the NICE guideline on [fever in under 5s](#) in statement 1 and the related NICE quality standards section have been updated.



## 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.

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, this may not always be appropriate in practice. Taking account of safety, shared decision-making, choice and professional judgement, desired levels of achievement should be defined locally.

Information about [how NICE quality standards are developed](#) is available from the NICE website.

See our [webpage on quality standard advisory committees](#) for details of standing committee 1 members who advised on this quality standard. Information about the topic experts invited to join the standing members is available from the [webpage for this quality standard](#).

This quality standard has been included in the [NICE Pathway for urinary tract infection in under 16s](#), which brings together everything we have said on a topic in an interactive flowchart.

NICE has produced a [quality standard service improvement template](#) to help providers make an initial assessment of their service compared with a selection of quality statements. This tool is updated monthly to include new quality standards.

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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## Endorsing organisation

This quality standard has been endorsed by NHS England, as required by the Health and Social Care Act (2012)

## Supporting organisations

Many organisations share NICE's commitment to quality improvement using evidence-based guidance. The following supporting organisations have recognised the benefit of the quality standard in improving care for patients, carers, service users and members of the public. They have agreed to work with NICE to ensure that those commissioning or providing services are made aware of and encouraged to use the quality standard.

- [Royal College of General Practitioners \(RCGP\)](#)
- [Royal College of Nursing \(RCN\)](#)
- [Royal College of Paediatrics and Child Health](#)