NICE National Institute for Health and Care Excellence

NICE quality standard

Acute kidney injury

Quality standard

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Contents

This standard is based on CG50 and NG148.

This standard should be read in conjunction with QS72, QS5, QS15, QS66 and QS9.

Introduction

This quality standard covers the prevention, detection and management of non-traumatic acute kidney injury up to the point of renal replacement therapy in adults, young people and children older than 1 month. It does not cover the management of acute kidney injury in people with renal transplants or in pregnant women, but does include when to involve nephrology services for people with renal transplants. For more information see the topic overview.

Why this quality standard is needed

Acute kidney injury occurs when the kidneys suddenly (within hours or days of normal functioning) stop working as they should. It encompasses a wide spectrum of injury to the kidneys, not just 'kidney failure'. The kidneys need a competent circulation for normal function, so acute kidney injury is a feature of many severe illnesses as a result of reduced blood flow. Other causes of acute kidney injury include dehydration, some drugs, severe infections, blockage of the urinary tract and the contrast medium used for some types of scan.

Acute kidney injury is seen in 13% to 18% of all people admitted to hospital, with older adults being particularly affected. These patients are usually under the care of healthcare professionals practising in specialties other than nephrology, who may not always be familiar with the best care for patients with acute kidney injury. However, studies suggest that acute kidney injury is under-recorded on patients' notes and possibly under-recognised. A recent study (Kerr et al. 2014), based on Hospital Episodes Statistics (HES) data 2010/11, found that acute kidney injury was recorded in 2.4% of inpatient admissions. The same study used laboratory data to estimate that age- and gender-standardised prevalence estimates may be more than 5 times as high.

The number of inpatients affected by acute kidney injury means that it has a major impact on healthcare resources. The annual cost of inpatient care related to acute kidney injury in England is estimated to be £1.02 billion, which is just over 1% of the NHS budget (Kerr et al. 2014) and is more than is spent on breast cancer, lung cancer and bowel cancer combined (Health Service Journal 22 April 2014).

Inpatient mortality from acute kidney injury varies considerably, depending on severity, setting (intensive care or non-intensive care) and many other patient-related factors. HES data from 2010/11 show that patients died before discharge in approximately 28% of admissions where acute kidney injury was recorded. Because of its frequency and the associated mortality rate, prevention or amelioration of acute kidney injury would prevent a large number of deaths and substantially reduce complications and their associated costs.

Acute kidney injury is increasingly being seen in primary care, and so it is important to raise awareness of the condition among healthcare professionals working in primary care. It is also important that any identified cases of acute kidney injury are managed or referred appropriately.

Up to 30% of cases of acute kidney injury may be preventable (National Confidential Enquiry into Patient Outcome and Death 2009), and risk assessment and prevention, early recognition and management are key factors in preventing deaths and reducing complications. Because there is no specific treatment for acute kidney injury, management is mainly supportive. This involves treating the cause and managing the symptoms until the kidneys recover from the injury, and includes referral for renal replacement therapy if appropriate.

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

- Avoidable death (including primary causes other than acute kidney injury).
- Deterioration to stages 2 and 3 in people with acute kidney injury stage 1.
- The number of people who need acute renal replacement therapy.
- Prevalence of chronic kidney disease.
- Patient experience of hospital care.
- The number of patient safety incidents.
- Admissions to critical care (and dialysis).
- Length of hospital stay for acute kidney injury.
- Incidence of acute kidney injury.
- Complications associated with acute kidney injury (for example, hyperkalaemia, fluid overload).

How this quality standard supports delivery of outcome frameworks

NICE quality standards are a concise set of prioritised statements designed to drive measurable quality improvements within 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 2014 to 2015

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

Table 1 NHS Outcomes Framework 2014 to 2015

Domain	Overarching indicators and improvement areas
1 Preventing people from dying prematurely	*Overarching indicator* 1a Potential Years of Life Lost (PYLL) from causes considered amenable to healthcare i) Adults, ii) Children and young people
2 Enhancing quality of life for people with long-term conditions	*Overarching indicator* 2 Health-related quality of life for people with long-term conditions

3 Helping people to recover from episodes of ill health or following injury	*Overarching indicator* 3b Emergency readmissions within 30 days of discharge from hospital* *Improvement areas* **Improving outcomes from planned treatments** 3.1 Total health gain as assessed by patients for elective procedures i) Hip replacement, ii) Knee replacement, iii) Groin hernia, iv) Varicose veins **Improving recovery from injuries and trauma** 3.3 Survival from major trauma
4 Ensuring that people have a positive experience of care	*Overarching indicator* 4b Patient experience of hospital care *Improvement areas* **Improving hospitals' responsiveness to personal needs** 4.2 Responsiveness to inpatients' personal needs **Improving people's experience of accident and emergency services** 4.3 Patient experience of A&E services

5 Treating and caring for people in a safe environment and protecting them from avoidable harm	*Overarching indicator* 5a Patient safety incidents reported 5b Safety incidents involving severe harm or death 5c Hospital deaths attributable to problems in care *Improvement areas* **Reducing the incidence of avoidable harm** 5.4 Incidence of medication errors causing serious harm **Delivering safe care to children in acute settings** 5.6 Incidence of harm to children due to 'failure to monitor'
Alignment across the health and social care system * Indicator shared with Public Health Outcomes Framework (PHOF)	

Patient experience and safety issues

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 acute kidney injury.

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. They specify 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. They also cover the provision of information to patients and service users. Quality statements on these aspects of patient experience are not usually included in topic-specific quality standards. However, recommendations in the development source(s) for quality standards that impact on patient experience and are specific to the topic are considered during quality statement development.

Coordinated services

The quality standard for acute kidney injury specifies that services should be commissioned from

and coordinated across all relevant agencies encompassing the whole acute kidney injury care pathway. A person-centred, integrated approach to providing services is fundamental to delivering high-quality care to people with acute kidney injury.

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 acute kidney injury 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 healthcare professionals involved in assessing, caring for and treating people with acute kidney injury 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(s) 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 with acute kidney injury. 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 who are at risk of acute kidney injury are made aware of the potential causes.

Statement 2 People who present with an illness with no clear acute component and 1 or more indications or risk factors for acute kidney injury are assessed for this condition.

Statement 3 People in hospital who are at risk of acute kidney injury have their serum creatinine level and urine output monitored.

Statement 4 People have a urine dipstick test performed as soon as acute kidney injury is suspected or detected.

Statement 5 People with acute kidney injury have the management of their condition discussed with a nephrologist as soon as possible, and within 24 hours of detection, if they are at risk of intrinsic renal disease or have stage 3 acute kidney injury or a renal transplant.

Statement 6 People with acute kidney injury who meet the criteria for renal replacement therapy are referred immediately to a nephrologist or critical care specialist.

Quality statement 1: Raising awareness in people at risk

Quality statement

People who are at risk of acute kidney injury are made aware of the potential causes.

Rationale

Many people who develop acute kidney injury are not aware of the potential causes and how to prevent it. Acute kidney injury can be prevented by educating people about the risks and how to stop it from developing. Better education delivered in primary care settings, outpatient settings and on discharge from hospital will help to reduce the number of people developing acute kidney injury outside hospital and the number being admitted to hospital with the condition.

Quality measures

Structure

Evidence of local arrangements to ensure that people who are at risk of acute kidney injury are made aware of the potential causes.

Data source: Local data collection.

Process

Proportion of people who are at risk of acute kidney injury who are made aware of the potential causes.

Numerator – the number in the denominator who are made aware of the potential causes of acute kidney injury in a documented discussion with their healthcare professional.

Denominator – the number of people who are at risk of acute kidney injury.

Data source: Local data collection.

Outcome

Incidence of acute kidney injury.

Data source: Local data collection.

What the quality statement means for different audiences

Service providers (GPs and district general hospitals) ensure that systems are in place for people who are at risk of acute kidney injury to be made aware of the potential causes and steps for prevention in a discussion with their healthcare professional (that also involves their parents or carers, if appropriate).

Healthcare professionals ensure that they discuss the potential causes of acute kidney injury and steps for prevention with people who are at risk (and with their parents or carers, if appropriate).

Commissioners (clinical commissioning groups) ensure that they commission services in which people who are at risk of acute kidney injury are made aware of the potential causes and steps for prevention in a discussion with their healthcare professional (that also involves their parents or carers, if appropriate).

People who are at risk of acute kidney injury are told about the risk in a discussion with their healthcare professional, which also involves their parents or carers if appropriate. The discussion should cover possible causes of acute kidney injury (for example, dehydration caused by diarrhoea and vomiting, and certain drugs that can affect the kidney) and what they can do to avoid it.

Source guidance

Acute kidney injury: prevention, detection and management (2019) NICE guideline NG148, recommendation 1.6.4

Definitions of terms used in this quality statement

People at risk of acute kidney injury

People who are particularly at risk of developing acute kidney injury in the community, and should have the risk discussed with them, include those who have any of the following:

- history of acute kidney injury (determined by the discharge summary from an inpatient episode, documenting the stage and cause of acute kidney injury)
- chronic kidney disease with an estimated glomerular filtration rate (eGFR) of less than 60 ml/min/1.73 m^2
- neurological or cognitive impairment or disability, which may mean limited access to fluids because of reliance on a carer.

[Expert opinion and NICE's guideline on acute kidney injury, recommendation 1.6.4]

Potential causes of acute kidney injury

The potential causes of acute kidney injury include conditions leading to dehydration (for example, diarrhoea and vomiting) and drugs that can cause or exacerbate kidney injury (including over-the-counter NSAIDs [non-steroidal anti-inflammatory drugs]). Healthcare professionals should discuss these causes and how to avoid them with people who are at risk (and their parents or carers if appropriate). The discussion should include the importance of staying hydrated, should be had at least once and should be documented in the person's notes.

[Adapted from NICE's guideline on acute kidney injury, recommendation 1.6.4 with expert opinion]

Equality and diversity considerations

Young age, neurological or cognitive impairment or disability may result in limited access to fluids and a risk of dehydration for some people because of their reliance on others to maintain adequate fluid intake. This may include frail older people, people with dementia in care homes and people with physical disabilities. Also, the risk of acute kidney injury might increase for people of Muslim faith during periods of fasting if they have other risk factors (for example, if they are taking diuretics).

Quality statement 2: Identifying acute kidney injury in people with no obvious acute illness

Quality statement

People who present with an illness with no clear acute component and 1 or more indications or risk factors for acute kidney injury are assessed for this condition.

Rationale

People with acute kidney injury may present with no obvious signs or symptoms of this condition in primary or secondary care settings. Early assessment for acute kidney injury when making decisions about treatment for people who are at risk may prevent delays in treating the condition, leading to improved outcomes. It is important for healthcare professionals to be aware of when it is necessary to assess the risk of acute kidney injury so that a diagnosis is not missed.

Quality measures

Structure

Evidence of local arrangements to ensure that people who present with an illness with no clear acute component and 1 or more indications or risk factors for acute kidney injury are assessed for acute kidney injury.

Data source: Local data collection.

Process

Proportion of presentations of illness with no clear acute component along with 1 or more indications or risk factors for acute kidney injury where an assessment for acute kidney injury is done.

Numerator – the number in the denominator where an assessment for acute kidney injury is done.

Denominator – the number of presentations of illness with no clear acute component along with 1 or more indications or risk factors for acute kidney injury.

Data source: Local data collection.

Outcome

Incidence of acute kidney injury.

*Data source:*Local data collection.

What the quality statement means for different audiences

Service providers (primary and secondary care providers) ensure that people who present with an illness with no clear acute component and 1 or more indications or risk factors for acute kidney injury are assessed for acute kidney injury.

Healthcare professionals consider and assess for acute kidney injury in people who present with an illness with no clear acute component and 1 or more indications or risk factors for acute kidney injury.

Commissioners (clinical commissioning groups) ensure that they commission services in which people who present with an illness with no clear acute component and 1 or more indications or risk factors for acute kidney injury are assessed for acute kidney injury.

People who are generally unwell with no obvious recent or sudden illness and who have indications or risk factors for acute kidney injury are assessed to see whether they have this condition. This should include blood tests and having their urine volume measured, as well as reviewing any medications they are taking.

Source guidance

Acute kidney injury: prevention, detection and management (2019) NICE guideline NG148, recommendation 1.1.4

Definitions of terms used in this quality statement

Illness with no clear acute component

A person with an illness with no clear acute component feels generally unwell (for example, tired

with perhaps nausea or swelling of the legs), and has no clear idea of when the illness began, and no clear sudden acute illness.

[Expert opinion]

Indications or risk factors for acute kidney injury in people with an illness with no clear acute component

The following are indications or risk factors for acute kidney injury in people with an illness with no clear acute component:

- chronic kidney disease (especially stage 3B, 4 or 5) or urological disease
- new-onset or significant worsening of urological symptoms
- symptoms suggesting complications of acute kidney injury
- symptoms or signs of a multi-system disease affecting the kidneys and other organ systems (for example, signs or symptoms of acute kidney injury plus a purpuric rash).

[NICE's guideline on acute kidney injury, recommendation 1.1.4]

Assessment for acute kidney injury

Clinical assessment for acute kidney injury involves doing a blood test to check serum creatinine levels against a previous result, measuring urine volume and reviewing medication. This assessment can be undertaken in a primary care setting as well as a hospital setting, although the frequency of blood testing may be less in a primary care setting.

[Expert opinion]

Equality and diversity considerations

All people presenting with no obvious acute illness who have indications or risk factors for acute kidney injury should be assessed for a possible diagnosis. Symptoms suggesting acute kidney injury should not be dismissed based on a person's age – for example, ignoring urological symptoms in older people. Young age, neurological or cognitive impairment or disability may mean that people are less able to describe their symptoms, so it is important that healthcare professionals look out for changes in behaviour that suggest acute kidney injury in these groups.

Quality statement 3: Monitoring in hospital for people at risk

Quality statement

People in hospital who are at risk of acute kidney injury have their serum creatinine level and urine output monitored.

Rationale

Acute kidney injury can be a 'silent' condition with no external signs or symptoms. Because many episodes of acute kidney injury are preventable, identifying people who are at risk and monitoring their clinical condition is important. Changes in serum creatinine level and urine output are indicators of risk, and it is important that these biomarkers are monitored alongside a 'track and trigger' system. Recognising and responding to these changes will ensure appropriate and quick intervention to prevent acute kidney injury developing.

Quality measures

Structure

Evidence of local arrangements to ensure that people in hospital who are at risk of acute kidney injury have their serum creatinine level and urine output monitored.

Data source: Local data collection.

Process

Proportion of admissions to hospital of people who are at risk of acute kidney injury where serum creatinine level and urine output are monitored.

Numerator – the number in the denominator where serum creatinine level and urine output are monitored.

Denominator – the number of admissions to hospital of people who are at risk of acute kidney injury.

Data source: Local data collection.

Outcome

Incidence of acute kidney injury.

*Data source:*Local data collection.

What the quality statement means for different audiences

Service providers (district general hospitals) ensure that protocols are in place for trained healthcare professionals to monitor the serum creatinine level and urine output of people in hospital who are at risk of acute kidney injury alongside a track and trigger system, and to respond to any changes.

Healthcare professionals follow local protocols for monitoring the serum creatinine level and urine output of people in hospital who are at risk of acute kidney injury alongside a track and trigger system, and respond to any changes.

Commissioners (clinical commissioning groups) ensure that secondary care providers have protocols in place for trained healthcare professionals to monitor the serum creatinine level and urine output of people in hospital who are at risk of acute kidney injury alongside a track and trigger system, and to respond to any changes.

People in hospitalwho are at risk of developing acute kidney injury should have blood tests to measure levels of creatinine (a substance that indicates how well their kidneys are working) and have their urine volume measured. Healthcare professionals should take action if they find any changes. This should be done for patients in acute hospitals and other hospital settings (such as psychiatric hospitals).

Source guidance

- Acute kidney injury: prevention, detection and management (2019) NICE guideline NG148, recommendations 1.2.2, 1.2.6 and 1.3.2
- Acutely ill patients in hospital: recognising and responding to deterioration (2007) NICE guideline CG50, recommendation 1.6

Definitions of terms used in this quality statement

People in hospital who are at risk of acute kidney injury

Adults in hospital at risk of acute kidney injury include those:

- who have non-elective admissions
- who have any major planned interventions, such as interventional radiological procedures (including coronary angiography) and grade 3 or grade 4 surgery, neurosurgery or cardiovascular surgery (see NICE's guideline on routine preoperative tests for elective surgery for definitions of surgery grades).

[Expert opinion]

NICE's guideline on acute kidney injury, recommendation 1.1.1 has a detailed list of risk factors for acute kidney injury in adults with acute illness.

Children and young people in hospital with acute illness are at risk of acute kidney injury if any of the following are likely or present:

- chronic kidney disease
- heart failure
- liver disease
- history of acute kidney injury
- oliguria (urine output less than 0.5 ml/kg/hour)
- young age, neurological or cognitive impairment or disability, which may mean limited access to fluids because of reliance on a parent or carer
- hypovolaemia
- use of drugs that can cause or exacerbate kidney injury (such as NSAIDs [non-steroidal anti-inflammatory drugs], aminoglycosides, ACE [angiotensin-converting enzyme] inhibitors, ARBs [angiotensin II receptor blockers] and diuretics) within the past week, especially if hypovolaemic
- symptoms or history of urological obstruction, or conditions that may lead to obstruction

- sepsis
- a deteriorating paediatric early warning score
- severe diarrhoea (children and young people with bloody diarrhoea are at particular risk)
- symptoms or signs of nephritis (such as oedema or haematuria)
- haematological malignancy
- hypotension.

[NICE's guideline on acute kidney injury, recommendation 1.1.2]

Monitoring of serum creatinine level and urine output

Physiological 'track and trigger' systems (early warning scores) should be used to monitor all adult patients in acute hospital settings. The serum creatinine level and urine output should be recorded at admission or in the initial assessment and then as part of routine monitoring.

Measurement of serum creatinine will vary according to clinical need, but daily measurement is typical while a person is acutely ill and/or in hospital. Serum creatinine levels should be compared with a baseline measurement to detect changes that would trigger a response. Details of baseline measurements and detecting acute kidney injury based on changes in serum creatinine level can be found in NHS England's national algorithm.

Frequency of urine output monitoring will also depend on clinical circumstances. When adults are at risk of acute kidney injury, systems should be in place to recognise and respond to oliguria (urine output of less than 0.5 ml/kg/hour).

For children and young people, physiological observations should be recorded at admission and then according to local protocols for given paediatric early warning scores.

The frequency of monitoring for adults, children and young people should increase if abnormal physiology is detected.

[Adapted from NICE's guideline on acutely ill adults in hospital and NICE's guideline on acute kidney injury]

Equality and diversity considerations

Young age, neurological or cognitive impairment or disability may result in limited access to fluids and a risk of dehydration for some people because of their reliance on others to maintain adequate fluid intake. This may include frail older people, people with dementia in care homes and those with physical disabilities. Also, the risk of acute kidney injury might increase for people of Muslim faith during periods of fasting if they have other risk factors (for example, if they are taking diuretics).

Quality statement 4: Identifying the cause – urine dipstick test

Quality statement

People have a urine dipstick test performed as soon as acute kidney injury is suspected or detected.

Rationale

Understanding the cause of acute kidney injury by testing the urine for blood and protein is important for guiding further specialised investigations and appropriate treatments. Urine dipstick testing is a simple, effective and inexpensive diagnostic test to identify underlying conditions that can be treated to either prevent acute kidney injury or reduce its severity, thus avoiding more serious consequences.

Quality measures

Structure

Evidence of local arrangements to ensure that people have a urine dipstick test performed as soon as acute kidney injury is suspected or detected.

Data source: Local data collection.

Process

Proportion of presentations where a urine dipstick test is performed within 6 hours of acute kidney injury being suspected or detected.

Numerator – the number in the denominator where a urine dipstick test is performed within 6 hours of acute kidney injury being suspected or detected.

Denominator – the number of presentations in which acute kidney injury is suspected or detected.

Data source: Local data collection.

Outcome

Preventing serious consequences resulting from not treating the causes of acute kidney injury.

Data source: Local data collection.

What the quality statement means for different audiences

Service providers (primary and secondary care providers) ensure that protocols and clear referral pathways are in place for urine dipstick testing to be carried out as soon as acute kidney injury is suspected or detected, and for appropriate responses to abnormal results.

Healthcare professionals perform urine dipstick testing as soon as acute kidney injury is suspected or detected, and know when and how to respond to abnormal results.

Commissioners (clinical commissioning groups) ensure that primary and secondary care providers have protocols in place for urine dipstick testing to be carried out as soon as acute kidney injury is suspected or detected, and for appropriate responses to abnormal results.

Peoplewith suspected or detected acute kidney injury have their urine tested with a 'dipstick' as soon as possible to check for causes of acute kidney injury.

Source guidance

Acute kidney injury: prevention, detection and management (2019) NICE guideline NG148, recommendation 1.4.2

Definitions of terms used in this quality statement

Suspected or detected acute kidney injury

Symptoms or signs of acute kidney injury can vary and include passing less urine than normal, nausea and sickness, poor appetite, swelling of the legs or other parts of the body and breathlessness.

[Expert opinion]

Acute kidney injury is detected in line with the (p)RIFLE[1], AKIN[2] or KDIGO[3] definitions, by using any of the following criteria:

- a rise in serum creatinine of 26 micromol/litre or greater within 48 hours
- a 50% or greater rise in serum creatinine known or presumed to have occurred within the past 7 days
- a fall in urine output to less than 0.5 ml/kg/hour for more than 6 hours in adults and more than 8 hours in children and young people
- a 25% or greater fall in estimated glomerular filtration rate (eGFR) in children and young people within the past 7 days.

[NICE's guideline on acute kidney injury, recommendation 1.3.1]

A national algorithm that standardises the definition of acute kidney injury has been agreed and endorsed by NHS England.

Urine dipstick test

A urine dipstick tests the urine sample for blood, protein, leukocytes, nitrites and glucose, and can help to determine an underlying cause of acute kidney injury. The test should be done as soon as possible after acute kidney injury is suspected or detected, and within 6 hours at most. Catheterisation for the sake of performing the test should be avoided. The results of the test should be documented and appropriate action taken when results are abnormal. The interpretation of urine dipstick findings in a child with acute kidney injury should always be undertaken by a paediatrician or a paediatric nephrologist.

[Adapted from NICE's 2013 full guideline on acute kidney injury, with expert opinion]

[1] Risk, injury, failure, loss, end stage renal disease, (p) refers to the paediatric classification.

[2] Acute Kidney Injury Network.

[3] Kidney disease: improving global outcomes.

Quality statement 5: Discussion with a nephrologist

Quality statement

People with acute kidney injury have the management of their condition discussed with a nephrologist as soon as possible, and within 24 hours of detection, if they are at risk of intrinsic renal disease or have stage 3 acute kidney injury or a renal transplant.

Rationale

Input from nephrologists to the management of acute kidney injury is needed as soon as possible for people who are at risk of their condition worsening or of adverse outcomes. This helps to ensure that people get the specialist care they need to help their condition improve and to prevent it from deteriorating further.

Quality measures

Structure

Evidence of local arrangements to ensure that people with acute kidney injury who are at risk of intrinsic renal disease or have stage 3 acute kidney injury or a renal transplant have the management of their condition discussed with a nephrologist as soon as possible and within 24 hours of detection.

Data source: Local data collection.

Process

Proportion of presentations of people with acute kidney injury who are at risk of intrinsic renal disease or have stage 3 acute kidney injury or a renal transplant where management is discussed with a nephrologist within 24 hours of detection.

Numerator – the number in the denominator where management is discussed with a nephrologist within 24 hours of detection of acute kidney injury.

Denominator – the number of presentations of people with acute kidney injury who are at risk of intrinsic renal disease or have stage 3 acute kidney injury or a renal transplant.

Data source: Local data collection.

Outcomes

a) Mortality from acute kidney injury.

Data source:Mortality statistics from the Office for National Statistics.

b) Progression of acute kidney injury.

Data source: Local data collection.

What the quality statement means for different audiences

Service providers (district general hospitals) ensure that the management of acute kidney injury for people who are at risk of intrinsic renal disease or have stage 3 acute kidney injury or a renal transplant is discussed with a nephrologist or paediatric nephrologist as soon as possible, and within 24 hours of detection.

Healthcare professionals discussthe management of acute kidney injury for people who are at risk of intrinsic renal disease or have stage 3 acute kidney injury or a renal transplant with a nephrologist or paediatric nephrologist as soon as possible, and within 24 hours of detection.

Commissioners (clinical commissioning groups) ensure that secondary care providers have protocols in place so that the management of acute kidney injury for people who are at risk of intrinsic renal disease or have stage 3 acute kidney injury or a renal transplant is discussed with a nephrologist or paediatric nephrologist as soon as possible, and within 24 hours of detection.

People with acute kidney injury who are at risk of kidney disease or have stage 3 acute kidney injury or a kidney transplant have their condition discussed with a specialist as soon as possible (within 24 hours at most), so that they get the right treatment.

Source guidance

Acute kidney injury: prevention, detection and management (2019) NICE guideline NG148, recommendation 1.5.15

Definitions of terms used in this quality statement

People with acute kidney injury

Acute kidney injury is detected in line with the (p)RIFLE[4], AKIN[5] or KDIGO[6] definitions, by using any of the following criteria:

- a rise in serum creatinine of 26 micromol/litre or greater within 48 hours
- a 50% or greater rise in serum creatinine known or presumed to have occurred within the past 7 days
- a fall in urine output to less than 0.5 ml/kg/hour for more than 6 hours in adults and more than 8 hours in children and young people
- a 25% or greater fall in estimated glomerular filtration rate (eGFR) in children and young people within the past 7 days.

[NICE's guideline on acute kidney injury, recommendation 1.3.1]

A national algorithm that standardises the definition of acute kidney injury has been agreed and endorsed by NHS England.

People with acute kidney injury who are at risk of intrinsic renal disease

People with acute kidney injury are at risk of intrinsic renal disease when one or more of the following is present:

- a possible diagnosis that may need specialist treatment (for example, vasculitis, glomerulonephritis, tubulointerstitial nephritis or myeloma)
- acute kidney injury with no clear cause
- inadequate response to treatment

- complications associated with acute kidney injury
- chronic kidney disease stage 4 or 5.

[NICE's guideline on acute kidney injury, recommendation 1.5.15]

People who have stage 3 acute kidney injury

Stage 3 acute kidney injury is defined in the (p)RIFLE[4], AKIN[5] or KDIGO[6] definitions as:

- eGFR decrease by 75% or greater
- or 200% or greater rise in creatinine from baseline within 7 days[7]
- or rise in creatinine to 354 micromol/litre or greater with an acute rise of 44 micromol/litre or greater
- or rise in creatinine to 354 micromol/litre or greater with an acute rise of 26 micromol/litre or greater within 48 hours or 50% or greater within 7 days
- or (pRIFLE only) eGFR less than 35 ml/min/1.73 m^2
- or any requirement for renal replacement therapy.

[NICE's 2013 full guideline on acute kidney injury, table 36]

[4] Risk, injury, failure, loss, end stage renal disease, (p) refers to the paediatric classification.

[5] Acute Kidney Injury Network.

[6] Kidney disease: improving global outcomes.

[7] Where the rise is known (based on a prior blood test) or presumed (based on the patient history) to have occurred within 7 days.

Quality statement 6: Referral for renal replacement therapy

Quality statement

People with acute kidney injury who meet the criteria for renal replacement therapy are referred immediately to a nephrologist or critical care specialist.

Rationale

It is important to ensure that people with acute kidney injury who need treatment receive it in the right care setting (such as an intensive care unit or renal unit) at the right time, and that delays in treatment that put people at risk are avoided. This can be achieved through immediate referral supported by effective referral and transfer protocols that prioritise people with the greatest need. Prompt treatment offers potential benefits that include preventing further deterioration of renal function, improving chances of renal recovery, shorter hospital stays, lower mortality and better long-term outcomes.

Quality measures

Structure

Evidence of local arrangements to ensure that people with acute kidney injury who meet the criteria for renal replacement therapy are referred immediately to a nephrologist or critical care specialist and transferred according to local protocols.

Data source: Local data collection.

Process

Proportion of people with acute kidney injury who meet the criteria for renal replacement therapy who are referred immediately to a nephrologist or critical care specialist.

Numerator – the number in the denominator who are referred immediately to a nephrologist or critical care specialist.

Denominator – the number of people with acute kidney injury who meet the criteria for renal replacement therapy.

Data source: Local data collection.

Outcomes

a) Duration of renal replacement therapy for acute kidney injury.

Data source: Local data collection.

b) Mortality from acute kidney injury.

*Data source:*Mortality statistics from the Office for National Statistics.

What the quality statement means for different audiences

Service providers (district general hospitals and specialised renal centres) ensure that clear referral pathways and transfer protocols are in place for the immediate referral of people with acute kidney injury who meet the criteria for renal replacement therapy to a nephrologist or critical care specialist.

Healthcare professionals immediately refer people with acute kidney injury who meet the criteria for renal replacement therapy to a nephrologist or critical care specialist and transfer them according to local protocols.

Commissioners (clinical commissioning groups and NHS England) ensure that secondary care providers have clear referral pathways and transfer protocols in place for the immediate referral of people with acute kidney injury who meet the criteria for renal replacement therapy to a nephrologist or critical care specialist. Commissioners should work with NHS England when necessary to ensure that there is enough capacity within specialist nephrology teams for referrals.

People with acute kidney injury who need renal replacement therapy (such as dialysis) are referred immediately to specialist services so that delays in having the treatment are avoided.

Source guidance

Acute kidney injury: prevention, detection and management (2019) NICE guideline NG148, recommendation 1.5.11

Definitions of terms used in this quality statement

People with acute kidney injury

Acute kidney injury is detected in line with the (p)RIFLE[8], AKIN[9] or KDIGO[10] definitions, by using any of the following criteria:

- a rise in serum creatinine of 26 micromol/litre or greater within 48 hours
- a 50% or greater rise in serum creatinine known or presumed to have occurred within the past 7 days
- a fall in urine output to less than 0.5 ml/kg/hour for more than 6 hours in adults and more than 8 hours in children and young people
- a 25% or greater fall in estimated glomerular filtration rate (eGFR) in children and young people within the past 7 days.

[NICE's guideline on acute kidney injury, recommendation 1.3.1]

A national algorithm that standardises the definition of acute kidney injury has been agreed and endorsed by NHS England.

Immediate referral

Immediate referral by healthcare professionals is needed to ensure timely initiation of therapy. Effective and timely referral should be made using locally developed referral and transfer protocols. These protocols should be based on National Early Warning Score (NEWS), to ensure that people who meet the criteria for renal replacement therapy are seen by a suitable specialist and that there is appropriate triage of people with acute kidney injury, including those arriving from other hospitals.

[Adapted from The Renal Association's Acute kidney injury guideline 8.1 and 8.2, with expert opinion]

Criteria for renal replacement therapy

If any of the following are not responding to medical management:

- hyperkalaemia
- metabolic acidosis
- symptoms or complications of uraemia (for example, pericarditis or encephalopathy)
- fluid overload
- pulmonary oedema.

[NICE's guideline on acute kidney injury, recommendation 1.5.8]

[8] Risk, injury, failure, loss, end stage renal disease, (p) refers to the paediatric classification.

[9] Acute Kidney Injury Network.

[10] Kidney disease: improving global outcomes.

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.

Expected levels of achievement for quality measures are not specified. Quality standards are intended to drive up the quality of care, and so aspirational achievement levels are likely to be 100% (or 0% if the quality statement states that something should not be done). However, it is recognised that this may not always be appropriate in practice taking account of patient safety, patient choice and clinical judgement and therefore desired levels of achievement should be defined locally.

See NICE's how to use quality standards for further information, including advice on using quality measures.

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 are available.

Good communication between healthcare professionals and people with acute kidney injury, 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 with acute kidney injury 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 on the NICE website.

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.

- Acute kidney injury: prevention, detection and management (2019) NICE guideline NG148
- Acute kidney injury (2019) The Renal Association
- Acutely ill patients in hospital: recognising and responding to deterioration (2007) NICE guideline CG50

Policy context

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

- National Confidential Enquiry into Patient Outcome and Death (2009) Adding insult to injury
- Department of Health (2004) National service framework for renal services. Chronic kidney disease, acute renal failure and end of life care

Definitions and data sources for the quality measures

- NHS England (2014) Acute kidney injury algorithm.
- The Office for National Statistics (2014) Mortality statistics.

Related NICE quality standards

Published

- Patient experience in adult NHS services (2012, updated 2019) NICE quality standard 15
- Renal replacement therapy services for adults (2014, updated 2018) NICE quality standard 72
- Chronic kidney disease in adults (2011, updated 2017) NICE quality standard 5
- Intravenous fluid therapy in children and young people in hospital (2016) NICE quality standard 131
- Intravenous fluid therapy in adults in hospital (2014) NICE quality standard 66

Future quality standards

This quality standard has been developed in the context of all quality standards referred to NICE, including the following topics scheduled for future development:

Renal and ureteric stones. Publication expected April 2020.

Quality Standards Advisory Committee and NICE project team

Quality Standards Advisory Committee

This quality standard has been developed by Quality Standards Advisory Committee 4. Membership of this committee is as follows:

Miss Alison Allam
Lay member

Dr Harry Allen
Consultant old age psychiatrist, Manchester Mental Health and Social Care Trust

Mrs Claire Beynon (member until June 2014)
Head of threshold management and individual funding requests, NHS South West Commissioning Support Unit

Dr Jo Bibby
Director of strategy, The Health Foundation

Mrs Jane Bradshaw
Lead nurse specialist in neurology, Norfolk Community Health and Care

Dr Allison Duggal
Consultant in public health, Public Health England

Mr Tim Fielding
Consultant in public health, North Lincolnshire Council

Mrs Frances Garraghan
Lead pharmacist for women's health, Central Manchester Foundation Trust

Mrs Zoe Goodacre
Network manager, South Wales Critical Care Network

Mr Malcolm Griffiths (Acting Chair at post-consultation meeting)
Consultant obstetrician and gynaecologist, Luton and Dunstable University Hospital NHS Foundation Trust

Dr Jane Hanson
Head of cancer national specialist advisory group core team, Cancer National Specialist Advisory Group, NHS Wales

Ms Nicola Hobbs
Assistant director of quality and contracting, Northamptonshire County Council

Mr Roger Hughes
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Mr John Jolly
Chief executive officer, Blenheim Community Drug Project, London

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Consultant liaison psychiatrist, Manchester Mental Health and Social Care Trust

Dr Rubin Minhas
GP principal, Oakfield Health Centre, Kent

Mrs Julie Rigby
Quality improvement programme lead, Strategic Clinical Networks, NHS England

Mr Alaster Rutherford
Primary care pharmacist, NHS Bath and North East Somerset

Mr Michael Varrow
Information and intelligence business partner, Essex County Council

Mr John Walker
Head of operations, Greater Manchester West Mental Health NHS Foundation Trust

The following specialist members joined the committee to develop this quality standard:

Dr Sarah Harding (member since May)

GP, Park Edge Practice, Leeds

Mrs Coral Hulse
Nurse consultant, Mid Cheshire Hospitals NHS Foundation Trust

Dr Andrew Lewington
Consultant renal physician, Leeds Teaching Hospital

Ms Fiona Loud
Lay member

Dr Marlies Ostermann
Consultant in critical care and nephrology, Guy's and St Thomas' Foundation NHS Trust

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Update information

Minor changes since publication

December 2019: Source guidance references have been changed to align this quality standard with the updated NICE guideline on acute kidney injury. References and links have also been updated throughout.

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 acute kidney injury and the NICE Pathway on acutely ill patients in hospital.

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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.

- British Kidney Patient Association
- Intensive Care Society
- National Kidney Federation
- Royal College of Nursing (RCN)
- Royal College of Pathologists
- Society for Acute Medicine (SAM)