

In this article...

- The burden and cost of acute kidney injury
- The benefits of involving frontline staff in developing commissioning levers
- An example of a nurse-led commissioning project

Development of new commissioning levers for acute kidney injury services

Key points

1 Around 100,000 deaths in NHS hospitals annually are linked to acute kidney injury (AKI), of which roughly a third are believed to be avoidable

2 There are three stages of AKI ranging from less severe to significant and life threatening

3 It is important to raise awareness of AKI among nurses and clinicians across the board, not just in renal or emergency settings

4 Involving frontline staff and patients in the development of a payments framework contributes to making it more relevant and effective

5 Think Kidneys is a national programme to develop information and resources for the detection, management and treatment of AKI

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Abstract Awareness of the harm caused by acute kidney injury (AKI) has increased in recent years, especially since the launch of the national Think Kidneys programme. At the end of 2013, Southern Derbyshire Clinical Commissioning Group created a working group tasked with creating a new AKI Commissioning for Quality and Innovation framework, which was launched in April 2014. As a result, crude mortality rates from AKI in Southern Derbyshire have decreased from 25.3% to 23.0%. This article reports on this nurse-led development of pathways of care, and commissioning levers and incentives, aimed at improving awareness, detection, prevention and treatment of AKI.

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Acute kidney injury (AKI) is a growing healthcare challenge: one in five people admitted each year to UK hospitals as an emergency have AKI, and around 100,000 deaths in NHS hospitals annually are linked to it, of which roughly a third are believed to be avoidable (Stewart et al, 2009). Improving the detection, prevention and treatment of AKI is therefore a priority.

At the end of 2013, Southern Derbyshire Clinical Commissioning Group started working on a new AKI Commissioning for Quality and Innovation (CQUIN) scheme. Following the impetus given by the Think Kidneys campaign, this nurse-led project created commissioning levers in collaboration with frontline staff, which resulted in improvements across the board.

What is acute kidney injury?

Formerly known as acute renal failure, AKI is an acute and sudden deterioration in kidney function that occurs over a short space of time – within days or even hours. AKI is a syndrome with many different

causes, the most common being sepsis and low blood pressure. There are three stages of AKI, which delineate a spectrum of injury (or insult) to the kidneys ranging from less severe to significant and life threatening.

The condition can be detected by either a low urine output or a rise in serum creatinine, as per the Kidney Disease Improving Global Outcomes (KDIGO) staging of AKI (Table 1). To detect AKI, an earlier serum creatinine value for the patient (baseline value) is needed for comparison. Patients admitted to hospital should have their fluid balance monitored, particularly those at risk of AKI.

While renal and intensive care specialists may care for patients with the severe AKI, the majority of cases arise, or are managed, in the community or within other specialties in secondary care. Data from our region shows that approximately 60% of patients hospitalised with AKI developed it in the community and 40% in a hospital setting. The annual cost of AKI-related inpatient care in England is

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Table 1. Stages of AKI

Stage	Serum creatinine	Urine output
Stage 1	<ul style="list-style-type: none"> ● 1.5-1.9 times increase of baseline in 7 days OR ● $\geq 26.5\mu\text{mol/L}$ increase in 48 hours 	0.5ml/kg/hr for 6-12 hours
Stage 2	<ul style="list-style-type: none"> ● ≥ 2.0-2.9 times baseline 	<0.5ml/kg/hr for ≥ 12 hours
Stage 3	<ul style="list-style-type: none"> ● ≥ 3 times baseline OR ● Increase to $\geq 354\mu\text{mol/L}$ OR ● Initiation of renal replacement therapy OR ● In patients aged <18 years, decrease in eGFR to <35ml/min per 1.73m² 	<ul style="list-style-type: none"> <0.3ml/kg/hr for ≥ 24 hours OR Anuria for ≥ 12 hours

AKI = acute kidney injury; eGFR = estimated glomerular filtration rate.
Source: Kidney Disease Improving Global Outcomes (2012)

estimated to be £1.02bn, just over 1% of the NHS budget (Kerr et al, 2014) and the burden to individuals and healthcare services is high (Box 1). Clearly, it is important to raise awareness of the condition among nurses and clinicians in all settings, and for them to understand its prevention and detection, as well as what to do if AKI is confirmed.

Increased awareness

Awareness of AKI has increased across the NHS since the publication of the *Adding Insult to Injury* report (Stewart et al, 2009) and the 2013 launch of the Think Kidneys campaign (Box 2). One of the Think Kidneys workstreams involves identifying, developing and testing commissioning tools to help reduce the incidence of preventable AKI.

In Southern Derbyshire, we had been keen for many years to drive improvements in commissioning for AKI. We had tried to develop a local renal CQUIN scheme, but were unable to do this as AKI was not a national priority at the time; the launch of Think Kidneys changed that. In 2013, Natasha McIntyre, our CCG's deputy chief nurse at the time, sat on the UK Renal Registry (UKRR; www.renalreg.org). Developed and maintained by the Renal Association (www.renal.org), the registry collects data from the 71 adult and 13 paediatric renal centres across the UK. When Ms McIntyre told us Think Kidneys and the UKRR were looking for a pathfinder CCG to develop commissioning levers for AKI, we put ourselves forward and, in December 2013, began developing a new CQUIN framework. The whole process was nurse led.

A new way of commissioning Guiding principles

We were guided by the principles of the Think Kidneys programme (Bit.ly/ThinkKidneys), which includes the key objectives of education, prevention, improved detection and enhanced treatment. The overall aims were to ensure that 95% of at-risk patients would be assessed for AKI on admission to hospital, and to develop an effective care plan that would mitigate the risk and save lives.

At the start of the project we formed a CQUIN working group comprising representatives from primary care, acute care, pharmacy, medicines management and

health and social care, as well as a patient representative. The group was led by our chief nurse and Ms McIntyre (who later left and was replaced by project manager Sally Bassett). The aim was to launch the CQUIN framework by April 2014. As we had to allow time to test the commissioning levers before they would be rolled out nationally, we had only a few months to develop the framework.

Collaborating with Derby Teaching Hospitals Foundation Trust to create the new CQUIN framework led to a new way of working together; rather than 'quality assuring' us against a set of performance targets we had devised, the CCG worked with us as partners. We were aware of challenges the hospital was facing and were able to help it overcome some of those that arose, such as getting the IT systems to accommodate the risk assessment tools.

Clinical staff from the hospital's renal unit appreciated the fact that they were being asked to work on developing a payments framework that was clinically relevant to them and would have a direct impact on their quality improvement work. Normally, CQUIN payments are made to the trust's central budget, but this was different in that a proportion would go directly to fund the hospital's AKI improvement work; staff found this very motivating.

Patient representative Ruth Briggs, who had been diagnosed with AKI three years earlier, played a key role in the process, bringing a personal perspective to the

Box 1. The burden of acute kidney injury

Acute kidney injury (AKI) is linked to an increased risk of prolonged illness or death due to the build-up of toxins and fluids in the body. Older people are particularly at risk because of long-term conditions and medication interactions that affect renal reserve; they are also more vulnerable to acute illness. Sepsis, low blood pressure and dehydration can be compounded by medication such as diuretics and antihypertensives, while the metabolism and safety profile of drugs such as metformin may change in the context of AKI (Bit.ly/ThinkKidneys MedicinesOptimisation).

AKI can be the consequence of a wide range of illnesses. Traditionally, causes are divided into pre-renal (impaired blood supply to the kidneys), intrinsic (issues within the

kidneys) and post-renal (a blockage to outflow from the kidneys, such as retention due to prostate enlargement). Infection or sepsis and dehydration are two of the most common causes for AKI, which is reflected in the causes of death in people with AKI (Selby et al, 2012a).

AKI can cause complications in patients with long-term illness, prolonging hospital stays and increasing mortality even when the extent of it is small and the disease mild (Selby et al, 2012b). The long-term outcomes for these patients are especially poor and the financial burden on the NHS is considerable (Kerr et al, 2014). In Southern Derbyshire, the cost of AKI is estimated to be at least £2.5m per year (based on patient admission data).

working group. She explained how, before her AKI was diagnosed, she had been due to have an endoscopy, which would have entailed taking a drug to clear out her system and could have adversely affected her fluid balance, with potentially catastrophic results. Ms Briggs' condition could have become life threatening at any time. Her subsequent recovery has been a long one and, years on, she still needs careful monitoring. Because of her experience, Ms Briggs was keen for staff across the system – in primary, secondary and tertiary care – to have a better understanding of AKI and the impact of certain drugs.

A multi-level approach

The CQUIN framework was drafted by February 2014 and launched in April that year. We adopted a multi-level approach to improving the prevention, diagnosis and treatment of AKI, covering every stage of the patient journey.

Secondary care

Senior clinical staff from the renal unit at Royal Derby Hospital (the trust's main site) and colleagues from IT developed a tool that assesses the risk of AKI in all newly admitted patients. The tool asks a series of questions based on the patient's medical condition and symptoms, and flags up possible AKI and the degree of severity. This automatically triggers a care bundle, which includes:

- Carrying out a blood test;
- Stopping medication that may affect kidney function;
- Ensuring good levels of hydration.

In addition, an AKI education programme is available for staff across all specialties, which is provided as part of the Acutely Ill Patient course.

In May 2016, we held an event linked to World Kidney Day, inviting staff from the trust and other hospitals in the area to learn about AKI and hear patients' stories. More than 100 people attended and we planned a second event in 2017.

Primary care

Local commissioned service

Around 60% of patients hospitalised with AKI in Southern Derbyshire have acquired it in the community; clearly, primary care professionals have an important role to play in:

- Preventing its development in patients who are at risk;
- Recognising and managing it;
- Providing effective follow-up care.

In May 2014, we began developing a local commissioned service framework

Box 2. Think Kidneys: the NHS response to AKI

Raising awareness of acute kidney injury (AKI) is a priority for the NHS. Launched in 2013, the Think Kidneys campaign (Bit.ly/ThinkKidneys) aims to reduce death and avoidable harm for people with AKI, both in hospital and at home. Think Kidneys is a national programme targeting primary and secondary care as well as patients and carers, and developing information and resources for the detection, management and treatment of AKI.

In June 2014, the NHS issued a Level 3 patient safety alert calling for a timely and consistent approach to the detection and diagnosis of patients with AKI, including in primary care (Bit.ly/NHSSafetyAlertAKI).

consisting of a set of actions that would enable GPs to draw down additional funding. All GPs and nursing staff in primary care settings were asked to complete a short online questionnaire relating to AKI, with the aim of determining the level of knowledge about, and understanding of, AKI in primary care. The survey was followed by a series of educational sessions that were delivered by our consultant nephrologist.

Patient information leaflet

If patients become dehydrated – for example, during episodes of diarrhoea and vomiting – certain medicines, including angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARBs), diuretics and non-steroidal anti-inflammatory drugs, can increase their risk of AKI. Based on information provided by Think Kidneys, the renal team designed an information leaflet that GPs can give to patients; this advises patients:

- What to do if they are taking these drugs and become unwell;
- When to stop medicines;
- When to restart them;
- When to seek help from their GP (Bit.ly/DerbyAKILeaflet).

The leaflet has been distributed to GP practices across Derbyshire, and GPs are encouraged to discuss it with patients who are already taking, or are just starting to take drugs that increase AKI risk.

In the community

The Think Kidneys education and awareness programme for care homes (Bit.ly/ThinkKidneysCareHomes) aims to

increase awareness and understanding of AKI among staff caring for older people – one of the key at-risk groups. Empowering care home staff is an important way of improving the wellbeing of care home residents and helping them to avoid hospital admissions where possible.

In May 2015, we commissioned the Care Home Advisory Service, which is run by Derbyshire Community Health Services Foundation Trust, to deliver AKI training and education to care homes in the region. All care homes in the area were offered training and the majority accepted the offer.

Impact of the new framework

Two-and-a-half years after we began developing the new AKI CQUIN framework, we have seen a range of improvements across the CCG's catchment area.

Acute care

By the end of the second year, more than 90% of patients admitted to Royal Derby Hospital were assessed for AKI within 24 hours of admission. Risk assessment for AKI is now part of the quality agenda, and completion rates are monitored and fed back to clinical areas so they can see how they are performing, leading to a process of continuous improvement. A digital version of the assessment tool has been developed and now forms part of the electronic patient record; this automatically calculates the patient's risk score, alerts staff and advises them what to do.

Of patients with AKI, 99% are discharged with a summary for their GP, outlining the type and severity of AKI, any blood tests required and relevant prescribing advice.

Anecdotal evidence suggests crude mortality from AKI between 2014 and 2016 fell from 25.3% to 23%; we are carrying out further assessments to confirm these statistics.

The risk assessment score uses an algorithm that calculates risk based on a range of patient characteristics; patients who score >4.5 are considered to be at risk of developing AKI. Currently, 51% of those with a risk assessment score of >4.5 have their medication optimised within 24 hours – it is clear more needs to be done to ensure medicines are optimised for patients at risk.

Primary care

All 56 of our GP surgeries engaged with our locally commissioned service framework and there were 996 responses (from a mixture of GPs, practice nurses and advanced practice nurses) to the survey.

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The training sessions resulted in the percentage of staff who had received training about AKI rising from 22% to 64%. A follow-up survey showed an improvement in knowledge and confidence among staff.

GP surgeries have also introduced a peer-review process to improve care for residents in care and nursing homes who have with AKI; this consists of case-based learning, discussion that is usually facilitated by an expert – and provision of relevant information and expertise where required.

In the community

Training has been completed in 22 of the 51 care homes in the region, and many of these have embedded AKI training in their monthly meetings and staff training. Friends and relatives are involved in AKI prevention, and over 100 AKI champions have been trained as part of the programme. Each champion has trained, on average, five other members of staff per month.

Success factors

We believe a number of factors contributed to the success of the AKI CQUIN framework in our region.

Collaboration

The collaborative approach taken by the working group and the engagement of a multidisciplinary team were key. We adopted a whole-system approach, rather than a medical or a nursing model. Consultants and

nurses worked together to create something that would make a real difference for patients. There was a sense of working for a common purpose, of helping one another to make the biggest difference we could for our patients. This was true multidisciplinary working.

Incentivising change

Developing a CQUIN payments framework incentivises organisations to implement changes in the way they deliver care. What made this CQUIN framework particularly effective was the fact that it was developed in conjunction with frontline staff and patients, who have the greatest insights into what can really make a difference. We worked in partnership with our provider organisations and there was a real sense of ownership of the tools and processes. This is likely to result in greater sustainability of the improvements.

A nurse-led project

The project was led by nurses who had a background in emergency and frontline care, as well as key influencers from the community sector, such as advanced nurse practitioners, care home staff trainers, GPs, and community and practice-based pharmacists. This not only gave them a high level of empathy for colleagues in all settings, but it also enabled them to understand the issues nurses face on a day-to-day basis and work towards developing practical and sustainable solutions.

The nurse's role is key when developing and implementing such drivers for change (Box 3) but, although the project was nurse-led, everyone involved had the same level of commitment to making a difference to patients and the same opportunities to contribute to the development of commissioning levers.

Communication

The project involved staff from a range of settings across primary and secondary care, and good communication was essential. We communicated with stakeholders via regular meetings, training sessions, workshops, bulletins and posters. The working group continues to meet monthly and calls on the support of the CCG chief nurse whenever her influence is needed to move things forward.

Project management

Initially, the development of the new CQUIN framework was challenging due to a lack of local leadership. The CCG specified that a project manager was needed to drive the project and a proportion of the funding was made contingent on there being one. Robust project management was therefore secured.

What next?

The CQUIN framework has slightly different specifications from its national counterpart, although the national version has been discontinued for 2017-18. We are currently embarking on a post-project evaluation to obtain a more detailed picture of the difference this work has made. There are plans to roll out the AKI work to colleagues in mental health, and negotiations for that are under way with a local mental health trust. **NT**

Box 3. The role of nurses

Acting as agents of change

Being at the front line of care gives nurses clear insights into the issues faced by patients and staff, and makes them effective agents of change. When nurses are engaged, they become empowered to do what needs to be done to improve care delivery. Nurses are present in every care setting; if they understand the issue and respond accordingly, they can bring about real change. A project funded by the Health Foundation, which aims to tackle AKI (Bit.ly/UKRRRTacklingAKI), found that engaging nurses is a key factor in driving continuous improvement.

Preventing AKI and saving lives

Nurses, especially those working in the community, have a key role in preventing at-risk patients from developing AKI. Practice and care home nurses need a good level of understanding of AKI, how to prevent it and what to do if they

suspect patients in their care may be developing the condition. Education is key: by understanding what AKI is, how to recognise symptoms, the importance of testing for it, the potential effects of drugs on renal function and how to prevent a worsening of the condition, nurses can help avoid patient harm and save lives. It is important for nurses in every specialty to have a good knowledge of AKI.

Changing public perceptions

Nurses have a key role in changing public perceptions of AKI and improving their understanding of it. With few discernible symptoms, AKI can be difficult to detect without a blood test. At-risk patients, particularly those on medication that may interfere with blood pressure or volume status, need to know the possible effects of AKI. Nurses can help by educating patients about what their kidneys do and why it is important to look after them.

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- Acute kidney injury: prevention and recognition
Bit.ly/NTAKIPrevention