NHS England

GIRFT GETTING IT RIGHT FIRST TIME

NHS IMPACT Improving Patient Care Together

National recommendations to standardise acute kidney injury detection and alerting

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GIRFT is part of an aligned set of programmes within NHS England

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What is the purpose of this guide?

This guide serves to support national standardisation and address the significant variation in Acute Kidney Injury (AKI) detection practices originally identified through research carried out by the GIRFT programme, the Association for Clinical Biochemistry and Laboratory Medicine (LabMed), the UK Kidney Association (UKKA), and UK National External Quality Assessment Services (NEQAS). The recommendations in this guide are specifically designed to ensure consistent implementation of the NHS England AKI algorithm mandated by the 2014 Patient Safety Alert, to standardise AKI detection, reporting, and communication processes to reduce unwarranted variation and improve patient safety.

Who is this guide intended for?

This national guide is designed to inform healthcare professionals and organisations involved in the detection, reporting and management of acute kidney injury.

As such this includes:

- Laboratory professionals and clinical biochemists (particularly those responsible for implementing AKI detection algorithms, and processing creatinine samples and generating AKI alerts).
- Renal medicine specialists and nephrologists.
- Primary care practitioners.
- Quality improvement teams.
- National quality and patient safety organisations.
- Laboratory Information Management System (LIMS) providers which install and maintain AKI algorithms.

Introduction

Acute Kidney Injury (AKI) is a common clinical syndrome with high mortality and morbidity, affecting as many as 20% of hospital admissions in developed healthcare systems. Survivors are at a higher risk of later developing Chronic Kidney Disease (CKD). The estimated annual cost of AKI in England is approximately £1 billion or 1% of the NHS budget. The publication of the 2009 National Confidential Enquiry into Patient Outcome and Death (NCEPOD) report into AKI identified significant deficiencies in the assessment of AKI risk, its detection, assessment of severity, and management. 'Think Kidneys', a three-year national initiative supported by NHS England and the UK Renal Registry (UKRR), was established in 2013 to improve AKI care and outcomes. This programme helped drive the 2014 NHSE Patient Safety Alert to standardise AKI detection, by mandating all acute trusts in England to implement AKI detection via a standardised algorithm by March 2015. This was initially only for patient samples collected in the hospital setting but was later rolled out to primary care. In brief, the NHSE AKI algorithm looks at previous creatinine results over the last 365 days in comparison to a current creatinine result to determine if AKI is likely present. AKI severity is also calculated, and three possible levels of AKI warning stage results are added - AKI Stage 1, AKI Stage 2 and AKI Stage 3. The algorithm was intended to be used to detect AKI in both children and adults, with only two patient groups to be excluded – neonates and patients receiving dialysis for end-stage kidney disease.

All laboratories in England were also mandated by the Patient Safety team at NHSE to submit AKI data to a central AKI master patient index hosted by UKRR for national quality improvement and assurance purposes. The UK Kidney Association (UKKA) 2018 national report stated that 87% of the 190 England-based laboratories submitted data to a standard to allow data analysis. The data that was analysed demonstrated a wide geographical variation in AKI incidence. This was also reflected in both the Renal and Pathology GIRFT national reports. GIRFT demonstrated a three- to five-fold variation in the incidence of all AKI stages both within emergency departments and primary care. The variation found by all three groups could only be partially explained by care quality factors as outlined in the NCEPOD and GIRFT reports.

To investigate this unwarranted laboratory variation further, a collaboration was formed in between the GIRFT pathology and renal workstreams, the Association for Clinical Biochemistry and Laboratory Medicine (LabMed), UK National External Quality Assessment Services (UK NEQAS) and UKKA, to form a GIRFT AKI working group. A national survey was designed to capture data on the whole AKI detection and alerting process in order to get a good understanding of laboratory processes that may lead to variation.

Click to access the research article

Recommendations

The GIRFT AKI working group has published the research article to raise awareness of the variation and the causes behind them, and furthermore has compiled 10 recommendations fully endorsed by GIRFT, the LabMed, UKKA and UK NEQAS.

1	It is strongly recommended that all laboratories use the enzymatic serum creatinine assay. It is recommended laboratories not using the enzymatic serum creatinine Assay implement this by 2025, or at least complete a business case for this by 2025. This recommendation is consistent with the advice provided in NICE: Chronic kidney disease: Assessment and management [NG203] (published in 2021). The results from the AKI element of the UK NEQAS for acute and chronic kidney disease EQA scheme have highlighted deficiencies in Jaffe detecting some AKI cases.
2	It is strongly recommended that all laboratories participate in an EQA scheme which specifically includes AKI, to ensure that the full pathway required for AKI reporting (analytical and the AKI algorithm) can be tested.
3	Laboratories in England must only use the NHS England AKI algorithm as per the 2014 NHS England Patient Safely Alert. Laboratories that have installed a different algorithm were required to install the NHS England AKI algorithm by the end of 2023, in line with updated NICE AKI guideline [NG148], recommendation 1.3.1.
4	LIMS providers must only install the NHS England AKI algorithm specified within the 2014 NHS England Patient Safely alert to laboratories based in England. Laboratories using an alternative AKI algorithm were required to replace it with the NHS England AKI algorithm by the end of 2023.
5	LIMS providers must make the installed NHS England AKI algorithm non-editable. All editable algorithms were to be made non-editable by the end of 2023. Any LIMS with an edited version of the NHS England AKI algorithm for laboratories based in England were required to revert back to the original algorithm by the end of 2023.
6	Laboratories must ensure all samples analysed for creatinine are also processed using the NHS England AKI algorithm, whether received from primary or secondary care settings. Blood samples from people receiving dialysis or who are pregnant are exceptions to this recommendation. Where possible, laboratories should develop processes to avoid reporting AKI in these patient populations. The AKI taskforce recognises it may not be feasible for many laboratories to exclude them, therefore exclusion by test request location, such as dialysis unit or maternity ward, may be more pragmatic.

7	Laboratories must report AKI in both children and adults, with the AKI reporting to begin at age equal to and above 28 days old, so only neonates are excluded. The AKI algorithm is designed for both children and adults, with the only exclusion being neonates (see the AKI Warning Algorithm Best Practice Guidance for more information).
8	Laboratories should establish local processes to alert the responsible clinical team for all blood samples which trigger a new stage 2 or 3 AKI warning alert. To prompt timely clinical response, it is recommended that direct communication takes place immediately (within two hours) for all new stage 3s and within 24 hours for all new stage 2s. The direct method of communication can be via telephone, texts alerts, AKI worklists or other methods that require contact with the relevant clinical team to inform them of a new AKI2 or new AKI3 so a clinical review can be performed. This contact is in addition to the AKI report being sent out by normal laboratory reporting routes. New AKI2s should be ideally communicated within two hours or within 24 hours when reported out-of-hours on primary care samples (i.e. the next morning or to out-of-hours services). Think Kidneys and Royal College of Pathologists also recommend AKI1s with potassium >6.0 mmol/L are communicated; however, it is recognised that some LIMS may not make this possible and so we advise local policy to be agreed.
9	As specified within the NHS England AKI algorithm, the comment '? AKI ? CKD. Suggest repeat' should be reported when current creatinine is above the reference range and there is no previous result within the last 365 days. The national AKI survey showed that only 69% correctly followed this part of the algorithm and reported the suggested comment.
10	It is advised that all laboratories review adult and paediatric reference ranges they currently provide for their creatinine assay, and liaise with their renal and paediatric services to achieve this. Laboratories should ensure adult and paediatric creatinine result reference ranges have been validated with their laboratory platform. The national AKI survey and the UK NEQAS for acute and chronic kidney disease scheme have found large variation in reference ranges being provided for both adults and children. It is advised for children to use the CALIPER database.

Further information

Recommended document	Author	Overview
Sage Journals: National recommendations to standardise acute kidney injury detection and alerting	William McKane, Martin Myers et al (2023)	A national survey designed to capture data on the whole AKI detection and alerting process.
Adding Insult to Injury: A review of the care of patients who died in hospital with a primary diagnosis of acute kidney injury	NCEPOD (2009)	A study on the process of care of patients who died in hospital with AKI, to identify remediable factors in the care received by these patients.
Acute Kidney Injury Warning Algorithm Best Practice Guidance	Think Kidneys (published 2014, revised 2022)	Best practice guidance intended to help with the installation, testing and introduction of AKI detection into clinical practice.
Transmitting AKI Warning Stage Data to the UK Renal Registry Best Practice Guidance	Think Kidneys (published 2015, revised 2016)	Best practice guidance for NHS laboratories on how to extract and transmit AKI warning stage data to the UK Renal Registry.
UK Renal Registry Acute kidney injury in England	UK Renal Registry (2020)	A report on the nationwide collection of AKI warning test scores from 2018.
Renal Medicine GIRFT Programme National Specialty Report	GIRFT (2021)	National report which aims to improve equity of access to kidney transplantation, ensure faster transfer of patients with AKI and increase rates of home therapy.
Pathology GIRFT Programme National Specialty Report	GIRFT (2021)	National report for pathology which aims to improve the patient experience 'end-to-end' – widening the focus of NHS pathology to look across the entire service, from the point at which a clinician considers a test, through to the patient's interpretation of the results.
NICE NG203: Chronic kidney disease: assessment and management	NICE (2021)	Guideline which covers care and treatment for people with, or at risk of, chronic kidney disease.

Contributors

Authors

William McKane	Consultant Nephrologist and Clinical Lead for Transplantation at Sheffield Teaching Hospitals NHS Foundation Trust
Martin Myers	Consultant Clinical Biochemist and Associate Divisional Medical Director for Pathology at Lancashire Teaching Hospitals NHS Foundation Trust

Working group members

Anna Barton	Principal Clinical Biochemist at the Royal Cornwall Hospitals NHS Trust
Rachel Marrington	Deputy Director and Consultant Clinical Scientist, Birmingham Quality
Finlay McKenzie	Consultant Clinical Scientist, University Hospitals Birmingham NHS Foundation Trust
James Medcalf	Consultant at University Hospitals of Leicester NHS Trust
Jonathan Murray	Consultant Nephrologist at South Tees NHS Foundation Trust
Nicolas Selby	Consultant Nephrologist at the Derby Hospitals NHS Foundation Trust
Alexandra Yates	Consultant Clinical Scientist at the Countess of Chester Hospital NHS Foundation Trust

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Andrew Daniel	Senior Content and Development Manager, GIRFT

About GIRFT and the GIRFT Academy

Getting It Right First Time (GIRFT) is a clinically-led national programme designed to identify and minimise unwarranted variation in treatment and care delivered. It undertakes clinically-led reviews of specialties, combining wide-ranging data analysis with the input and professional knowledge of senior clinicians to examine how things are currently being done and how they could be improved.

The programme has the backing of the Royal Colleges and professional associations and has a significant and growing presence on the Model Health System portal, with its data-rich approach providing the evidence for hospitals to benchmark against expected standards of service and efficiency.

The GIRFT model has now been applied in more than 50 different areas of clinical practice. It consists of five key strands:

1. Data Gathering – a broad data gathering and analysis exercise, generating a detailed picture of current national practice and outcomes.
2. Peer Reviews – direct clinical engagement via visits or virtual meetings between clinical leads and trust teams; an opportunity to examine trust behaviour in the context of the national picture, enabling teams to understand where they are performing well and what they can do better.
3. National Report & Academy resources – production of national reports that draw on data analysis and discussions with provider teams to identify opportunities for improvement, locally, regionally and nationally, alongside - clinical resources such as best practice pathways and guides.
4. Support to deliver – the implementation phase where the GIRFT team supports trusts, commissioners and integrated care systems to deliver the improvements recommended.
5. Research & Development – GIRFT fellowships support resident doctors, nurses and allied health professionals to develop their research and clinical improvement skills, delivering research projects and GIRFT identified improvements in their host provider, system or region.

For the latest version of this document, please see www.gettingitrightfirsttime.co.uk or Getting It Right First Time - FutureNHS Collaboration Platform

GIRFT and a greener NHS

Climate change is one of the greatest health threats and opportunities of the 21st century. The NHS is acting now to mitigate and adapt to this threat in order to protect the health of current and future generations. Doing so will not only protect the environment but will also bring many health, social and financial benefits. As the largest employer in the UK, contributing 4.6% of national emissions, the NHS is both part of the challenge and the solution.

Through its endeavour to improve the quality of care within the NHS by reducing unwarranted variation, GIRFT can play an important role in reducing the carbon emissions associated with care delivery. Through the GIRFT model, there is the opportunity to identify changes that will help reduce the NHS carbon footprint and therefore improve patient care now and in the future.