# An audit looking at the protection of patients from contrast induced - acute kidney injury (CI-AKI) following angiographic procedures

**Descriptor:**

Audit tool to ensure stable outpatients are assessed for increased risk of CI-AKI prior to angiography and are managed appropriately before, during and after the procedure.

**Background:**

The management of acute kidney injury costs the NHS £1.2 billion a year, with the administration of intravenous contrast being the third most common cause [1]. CI–AKI injury is increasingly recognised within stable outpatients. The risk of CI-AKI is increased during angiographic procedures due to contrast administration through the intra-arterial route. Both the RCR [2] and NICE [3] have published guidelines on reducing the incidence and detecting the development of CI-AKI.

The aims of the audit are to:

1. Raise awareness of CI-AKI

2. Ensure departments have appropriate policies to assess those at increased risk

3. Ensure departments are managing patients pre and post procedure according to RCR guidelines

## The Cycle

**The standard:**

Estimated glomerular filtration rate(eGFR) is recommended to identify chronic kidney disease (CKD) in stable outpatients and should be measured within 3 months prior to angiogram [2]. Patients should:

• Be assessed for risk factors for development of CI-AKI

• Be well hydrated before and after the procedure

• If baseline renal function is impaired have repeat kidney function tests (recommended 48 hours) after the procedure [3]

**Target:**

• 95% compliance

## Assess local practice

**Indicators:**

• The number of patients assessed for risk factors for CI-AKI

• The number of patients who had their risk of CI-AKI assessed

• The number of patients with risk factors for CI-AKI and/ or patients with impaired baseline kidney function (CKD stage 3 or 4) [4] assessed for the development of CI-AKI by repeat kidney function tests

**Data items to be collected:**

Evidence of:

•eGFR within 3 months of procedure (from electronic patient record)

•Assessment for risk factors of CIK-AKI (from the radiology records / case notes)

   - Age >70 years; known chronic renal impairment (eGFR < 60ml/min/1.73m2)

   - Diabetes mellitus in pre-existing CKD patients

   - Hypovolaemia

   - Dehydration (> 2 hours between last fluids and procedure)

   - Administration of nephrotoxic drugs

   - Presence of single or transplant kidney

• Intravenous administration of fluids 12 hours prior to and after procedure (from the radiology records/ case notes)

• Repeat measurement of eGFR after 48 hours if deemed at increased risk (from electronic patient record)

• Patient referred to Nephrology if meets criteria for CIK-AKI (from patient notes)

**Suggested number:**

Retrospective review of the patient notes and radiology records of 30 consecutive outpatients attending for an angiographic procedure.

**Suggestions for change if target not met:**

• Request form for angiographic procedure amended to include recent (<3 months) eGFR

• Introduction of patient checklist to include assessment of risk factors for CI-AKI

• Department policy altered to admit high risk patients for intravenous fluid administrationexpansion prior to and after procedure

• Ensure repeat kidney function tests after 48 hours post-procedure in high risk patients

**Resources:**

• Diary of angiographic procedures within department

• Electronic patientpathology records

• Review of casenotes

• Time to review case notes and patientpathology records: 6 hours

• Data analysis: 4 hours

**References:**

1. Estimating the financial cost of chronic kidney disease to the NHS in England. Kerr M1, Bray B, Medcalf J, O'Donoghue DJ, Matthews B. Nephrol Dial Transplant. 2012 Oct;27 Suppl 3:iii73-80. doi: 10.1093/ndt/gfs269. Epub 2012 Aug 5
2. Prevention of Contrast Induced Acute Kidney Injury (CI-AKI) In Adult Patients. Ref No: 2013. Developed by an intercollegiate working party of healthcare professionals from The Renal Association, The Royal College of Radiologists and The British Cardiovascular Intervention Society, these guidelines outline what is considered best practice for the administration of intravascular iodinated contrast agents to adults. [https://www.bcis.org.uk/wp-content/uploads/2017/03/PSSB16\_Renal\_Association\_Clinical\_Practice\_Guideline\_on\_Prevention\_Final\_Version.pdfhttp://www.rcr.ac.uk/publications.aspx?pageid=310&publicationid=391](https://www.bcis.org.uk/wp-content/uploads/2017/03/PSSB16_Renal_Association_Clinical_Practice_Guideline_on_Prevention_Final_Version.pdfhttp:/www.rcr.ac.uk/publications.aspx?pageid=310&publicationid=391)
3. Acute kidney injury: Prevention, detection and management of acute kidney injury up to the point of renal replacement therapyClinical guidelines, CG169 - Issued: August 2013 <http://guidance.nice.org.uk/cg169>
4. CKD stages – the renal association <http://www.renal.org/information-resources/the-uk-eckd-guide/ckd-stages>
5. Iodinated Contrast Media Guideline RANZCR <https://www.ranzcr.com/documents/573-iodinated-contrast-guidelines-2016/file>

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