# Acute kidney injury guideline

## clinical questions

| Chapter | Area of the scope | Review questions | Outcomes |
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| Assessing risk | Clinical risk assessment in the identification and on-going assessment of acute kidney injury. | Which risk assessment tools are the most accurate for predicting AKI in at risk adult patients?<br><br>Which risk assessment tools are the most accurate for predicting AKI in at risk paediatric patients? | • Sensitivity (%) and specificity (%)<br>• measures of discrimination and calibration including Area Under the Curve (AUC) |
| Preventing acute kidney injury | Preventing deterioration:<br>**a) nephrotoxic drugs in patients with, or at high risk of AKI**<br>b) methods to monitor the use of nephrotoxic and other potentially toxic drugs in patients with suspected or confirmed AKI | What is the clinical and cost effectiveness of stopping compared to continuing chronic ACEI and/or ARB therapy in patients with CKD to prevent AKI due to surgery, iodinated contrast, diarrhoea and vomiting, or sepsis? | • Incidence of acute kidney injury<br>• Cardiovascular events<br>• All cause mortality<br>• Number of patients needing RRT<br>• Length of hospital stay |
| Preventing acute kidney injury | Preventing deterioration:<br>a) nephrotoxic drugs in patients with, or at high risk of AKI<br>**b) methods to monitor the use of nephrotoxic and other potentially toxic drugs in patients with** | What is the clinical and cost effectiveness of methods for preventing inappropriate use of nephrotoxic drugs in hospital inpatients? | • Frequency of acute kidney injury due to nephrotoxic drugs<br>• Mortality<br>• Number of changes/interventions<br>• Time to discontinuation/ change in nephrotoxic drug<br>• Incidence of adverse events<br>• Length of stay |

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| | **suspected or confirmed AKI** | | |
| Preventing acute kidney injury | Clinical risk assessment in the identification and on-going assessment of acute kidney injury. | What is the diagnostic accuracy of paediatric early warning scores in detecting acutely ill children in hospital whose clinical condition is deteriorating or who are at risk of deterioration?<br><br>Note: This clinical question was asked to specifically review evidence related to children only. For the adult population, the AKI guideline advises clinicians to refer to recommendations in CG50 (acutely ill patients in hospital). | Main outcomes:<br>• Sensitivity (%) and specificity (%)<br>• Area under the ROC curve (AUC) – measure of predictive accuracy<br>Other outcomes:<br>• Positive/negative predictive value<br>• Positive/negative diagnostic likelihood ratios<br>• Mortality<br>• Number needing critical care<br>• Length of critical care/ hospital stay |
| Preventing acute kidney injury | Acetylcysteine and/or intravenous fluids to prevent contrast-induced nephropathy. | What is the comparative clinical and cost effectiveness of NAC and/or intravenous fluids in preventing CI-AKI in at risk patients? | • Contrast induced acute kidney injury (as defined by study)<br>• Mortality<br>• Number of patients needing RRT<br>• Length of hospital stay |
| Detecting acute kidney injury | Serum creatinine and urine output in diagnosis and staging. | What is the clinical evidence that RIFLE (pRIFLE) or AKIN or KDIGO are useful in detecting and staging AKI and predicting patient outcomes (mortality and RRT)? | • Diagnostic yield<br>• Diagnostic accuracy (sensitivity and specificity)<br>• All cause mortality (Odds ratios, AUROC)<br>• Number of patients needing RRT |
| Identifying the cause of acute kidney injury | Urinalysis to determine the underlying cause. | What is the sensitivity and specificity of urine dipstick compared to urine microscopy and/or biopsy in the detection of proteinuria and haematuria as indicators of glomerulonephritis in AKI patients? | Main outcomes:<br>• Sensitivity (%) and specificity (%)<br>• Area under the ROC curve (AUC) – measure of predictive accuracy<br>Other outcomes:<br>• Positive/negative predictive value<br>• Positive/negative diagnostic likelihood ratios |
| Identifying the cause of acute kidney injury | When to use ultrasound, and in which patients. | Which patients should have US for the diagnosis of the cause of AKI? | Main outcomes:<br>• Sensitivity (%) and specificity (%)<br>• Area under the ROC curve (AUC) – measure of predictive accuracy<br>Other outcomes:<br>• Positive/negative predictive value<br>• Positive/negative diagnostic likelihood ratios |

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| Managing acute kidney injury | Timing of relief of urological obstruction by methods such as nephrostomy. | In adults and children with AKI and upper tract urological obstruction, what is the clinical and cost effectiveness of early compared to delayed relief of obstruction by nephrostomy or stenting on mortality, severity of AKI, need for RRT and length of hospital stay? | • Mortality<br>• Worsening of AKI (as defined by study)<br>• Number of patients needing for RRT<br>• Length of hospital stay |
| Managing acute kidney injury | Pharmacological management with:<br>low dose dopamine<br>loop diuretics. | In adults and children with AKI, what is the clinical and cost effectiveness of loop diuretics compared to placebo on mortality, need for RRT, length of RRT, dialysis independence, length of hospital stay and hearing loss? | • In hospital mortality<br>• Number of patients needing RRT<br>• Length of RRT<br>• Dialysis independence<br>• Length of hospital stay<br>• Hearing loss |
| | | In adults and children with AKI, what is the clinical and cost effectiveness of low dose dopamine compared to placebo on mortality, need for RRT, length of RRT, dialysis independence, length of hospital stay and cardiac arrythmias? | • In hospital mortality<br>• Number of patients needing RRT<br>• Length of RRT<br>• Dialysis independence<br>• Length of hospital stay<br>• Cardiac arrhythmias |
| Managing acute kidney injury | At what stage RRT should be considered | In patients with AKI, what is the clinical and cost effectiveness of initiating early RRT compared to delayed RRT on mortality, renal recovery, duration of RRT, length of critical care stay and HRQoL? | • Mortality<br>• Renal recovery (as defined by study)<br>• RRT duration<br>• Length of ICU stay<br>• HRQoL |
| Managing acute kidney injury | Criteria for involving nephrology services. | In patients with or suspected of having AKI, what is the clinical and cost effectiveness of early compared to delayed referral to a nephrologist? | • Stage of AKI<br>• Number of patients needing RRT<br>• Mortality<br>• Renal recovery (as defined by study)<br>• Length of ICU stay<br>• Length of hospital stay |
| Information and support for patients and carers | Information and support for patients and carers. | What information and support do patients with acute kidney injury and their carers require? | • Patient /carer subjective reported outcomes<br>• Patient/carer satisfaction<br>• HRQoL<br>• Patient preference |