

31st March 2016

Acute Kidney Injury

NHS England has an Acute Kidney Injury or AKI initiative. This is to recognise AKI before progression to chronic kidney disease. Every serum creatinine request will generate an eGFR and also go through an algorithm to detect creatinine changes during the last year consistent with AKI. A significant rise in creatinine will produce an AKI Alert status, which will be resulted below the serum creatinine.

The status maybe:

AKI stage 1, a rise of > 1.5x baseline or of > 26 $\mu\text{mol/L}$ in 48h or a urine output < 0.5 mL/kg/h for 6-12h

AKI stage 2, a rise of > 2x baseline or a urine output < 0.5 mL/kg/h for > 12h

AKI stage 3, a rise of > 3x baseline or a rise of > 1.5x baseline to > 354 $\mu\text{mol/L}$ or urine output < 0.3 mL/kg/h for > 12h

All AKI 1, 2 and 3 will have serum bicarbonate added, to allow for assessment of metabolic acidosis in the patient. The kidney may not be able to excrete acid or there may be other factors contributing to the acidosis.

Comment for AKI stage 1 or 2 or 3:

Rise in serum creatinine may indicate Acute Kidney Injury stage 1 or 2 or 3.

Please review urgently.

Consider drugs that maybe harmful to kidneys, obstruction, hydration and infection.

Drugs known to contribute to acute kidney injury:

- Non-steroidal anti-inflammatory drugs
- Angiotensin-converting-enzyme inhibitors, Angiotensin-receptor blockers
- Diuretics especially K sparing diuretics
- Metformin
- β -lactam antibiotics (specifically contribute to interstitial nephropathy)
- Radio contrast agents
- Aminoglycosides
- Amphotericin
- Sulphonamides
- Aciclovir
- Methotrexate
- Cisplatin
- Ciclosporin, Tacrolimus

Some drugs e.g. aminoglycosides, angiotensin converting-enzyme inhibitors, non-steroidal anti-inflammatory drugs, cyclosporine, tacrolimus; can be suspended, or another less toxic or non-toxic drug used instead.

Hypovolaemia with decreased kidney blood flow & filtration maybe due to: Diarrhoea, Sepsis, Post surgery, Cardiac failure, Chronic disease, Hypertension, Diabetes, CKD: acute on chronic

Other AKI definitions

AKI stage 0

No comment because the serum creatinine has not changed significantly.

AKI Stage NA

Insufficient data. No serum creatinine within 1 year. Serum creatinine within reference range. No comment

AKI Stage NA

Insufficient data. No previous serum creatinine within 1 year. Current serum creatinine greater than reference range.

Comment: ?AKI ?CKD, suggest repeat creatinine to check

Laboratory staff will phone AKI stage 2 and 3 to practices direct line when manned or to the OOH services.

The AKI algorithm will generate false positive and false negative results. The result must be interpreted within the clinical context of the patient.

- [Think Kidneys, Resources for Primary Care and Community](#)

Please use link below to access 'Think Kidneys' resources for Primary Care:

<https://www.thinkkidneys.nhs.uk/aki/resources/primary-care/>

For ESH, the numbers of AKI alerts 1, 2 or 3 over 1 month are: 11000 GP requests for serum creatinine. There were AKI stage 1: 491 patients; AKI stage 2: 140 patients and AKI stage 3: 176 patients. AKI stage 0: 10000 patients and AKI stage NA: 1275 patients.

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References

Hill R & Selby N, Acute Kidney Injury Warning Algorithm Best Practice Guidance, <https://www.thinkkidneys.nhs.uk/.../AKI-Warning-Algorithm-Best-Practice-Guidance-final-publication-0112141.pdf>

Bellomo R, Kellum JA, Ronco C. Acute kidney injury www.thelancet.com Published online May 21, 2012 DOI:10.1016/S0140-6736(11)61454-2