Managing children with Acute Kidney Injury in primary care

What is Acute Kidney Injury?

Acute Kidney Injury or AKI, previously known as acute renal failure, is characterised by a sudden decline in kidney function and is rarely caused by trauma to the kidneys. AKI can occur without symptoms and is detected through a routine blood test (serum creatinine) and/or a decrease in urine output (KDIGO 2012). It has many different causes but most commonly occurs secondary to other serious illnesses such as sepsis or conditions associated with hypovolaemia and a drop in blood pressure e.g. vomiting, diarrhoea or blood loss. In some cases, certain medications can also affect the kidneys adversely and this can cause AKI or increase its severity. AKI is associated with an increased risk of death, length of hospital stay, risk of chronic kidney disease (CKD) and cost to the NHS.

How does AKI differ in children from adults?

Children's creatinine changes with age, and depends on how big they are and how much muscle mass they have. So, the interpretation of a creatinine value must take this into account.
Children with a creatinine above the acceptable range may have Chronic Kidney Disease (CKD) or they may have AKI.

Certain children are at greater risk of AKI either because of pre-existing disease / risk factors or because they fall into an acute high-risk scenario (see below). Children at high risk of AKI or in a high-risk scenario should have their serum creatinine measured.
Steps should be taken to prevent AKI by adequately monitoring kidney function, maintaining adequate hydration and by minimising harm.

Children at high risk of AKI include those with:

- Nephro-urological, cardiac or liver disease
- Malignancy and/ or a bone marrow transplant
- Dependence on others for access to fluids
- History of taking medication that may adversely affect renal function (ACEI/ARB, NSAIDs, aminoglycosides, calcineurin inhibitors)

Scenarios in which children can be at high risk of AKI include:

- History of reduced urine output
- Sepsis
- Hypoperfusion or dehydration
- History of exposure to drugs or toxin that may adversely affect renal function
- Renal disease or urinary tract obstruction
- Major surgery

Recommended action

As soon as a GP is aware of an AKI alert in a child (excluding those with known CKD) there should be immediate referral to the paediatric unit or ED (whichever is quicker) so the result can be confirmed and the child assessed.

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