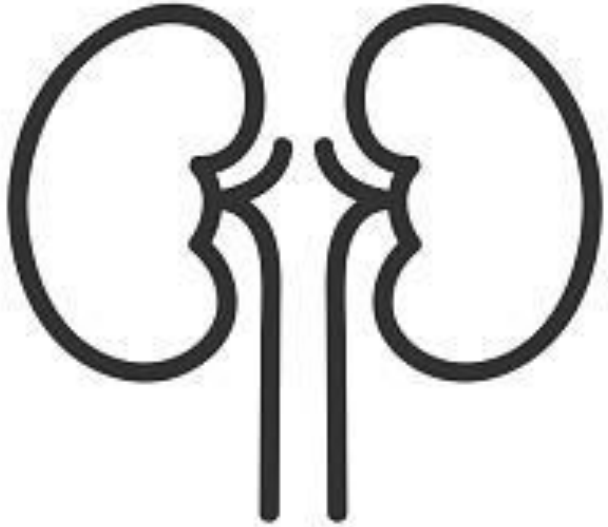
Acute Kidney Injury
In Children



Emergency Management

Acute Kidney Injury

- Acute decrease in glomerular filtration rate, which results in an increase in serum creatinine

- Increase in serum creatinine by $\geqq$ 0.3mg/dl within 48 hours
- Increase in serum creatinine by $\geqq$ 1.5 times baseline
- Urine volume < 0.5ml/kg/hr for 6 hours

Management

A- Airway

→ B- Breathing

→ C- Circulation

→ D- Disability

→ E-Exposure

Assessing Kidney Injury and Fluid Balance

Intrinsic Injury

Vascular spasm, intravascular coagulation and microvascular injury

Excess Total Body Fluid

Prerenal Injury

Decreased renal perfusion

Hypovolemic

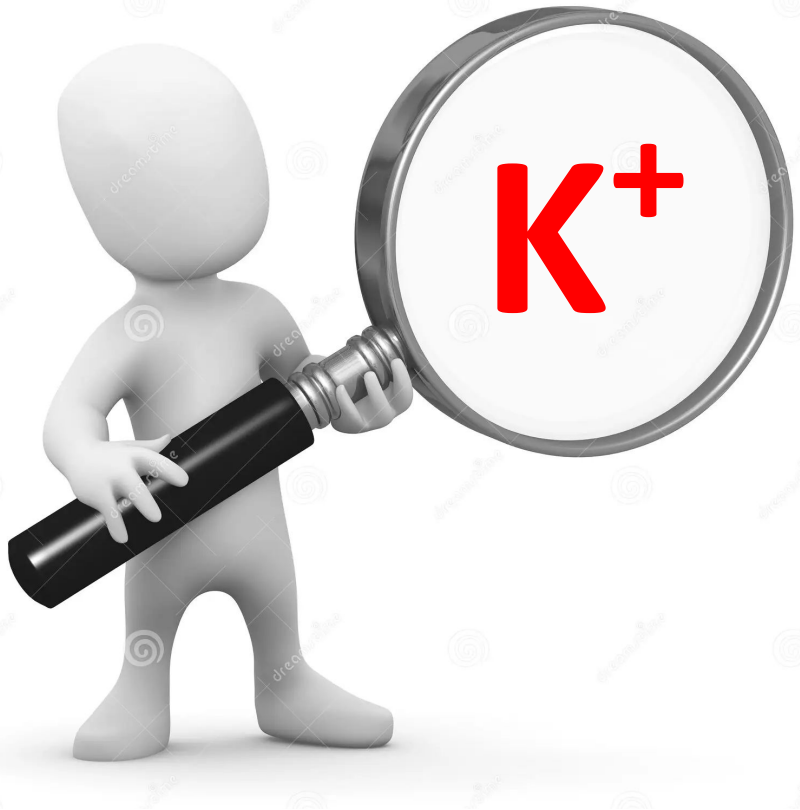
Management

- Fluid resuscitation if indicated
- Correct electrolyte imbalances
  - Metabolic acidosis
  - Hyperkalemia
  - Hyperphosphatemia and hypocalcemia
- Dialysis may be indicated
  - Refractory hyperkalemia
  - Volume overload
  - Intractable acidosis
  - Uremic encephalopathy
  - Pericarditis or pleuritis
  - Removal of certain toxins

Fluid Selection

- Choose normal saline for boluses
  - Ringer's lactate contains 4mEq of potassium per liter
- Crystalloid solutions can be considered
- D5 is preferred over D10 for treatment of hypoglycemia
- If blood is needed
  - Packed cells
  - Over slower period of time

Management of Hyperkalemia



- C- Calcium gluconate

- B- Beta-2 agonist and Bicarbonate
- I- Insulin
- G- Glucose

- K- Kayexlate (sodium polystyrene)

Medications to Avoid

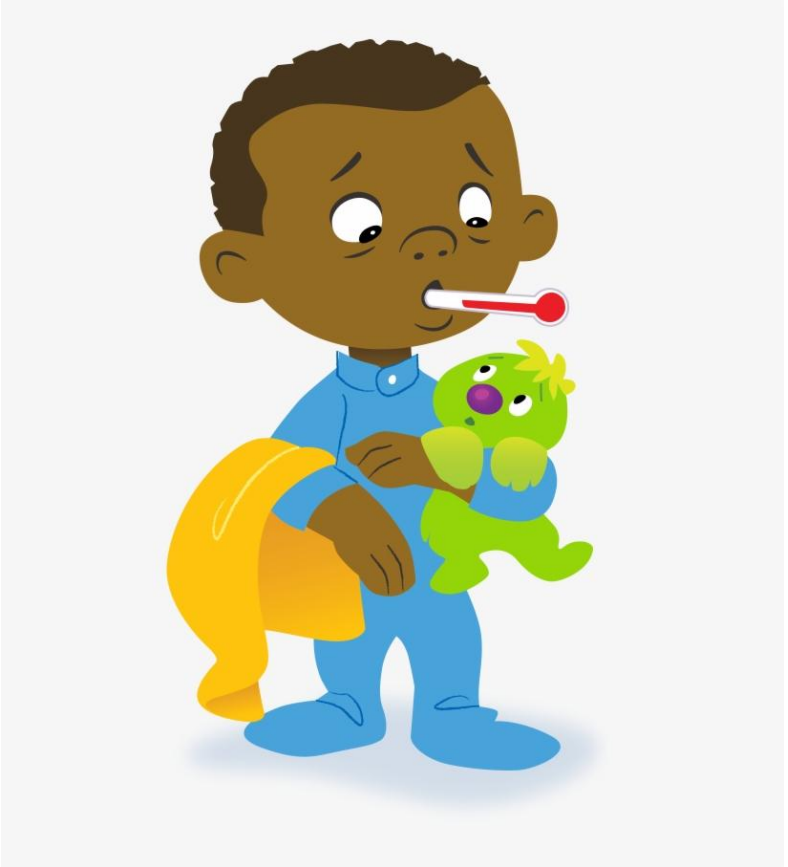
- Aminoglycosides
- Amphotericin
- NSAIDs
- Contrast

To Challenge Or Not To Challenge

- No clear guidance on use of furosemide or mannitol in AKI
- Use does not change the need for renal replacement therapies
- Potential physiologic benefits in intrinsic renal injury
- Should NOT be attempted unless intravascular fluid status is restored

Continuing Care

- Treatment of underlying illness
- Maintain fluid balance
- Close monitoring of urine output
  - Goal >1ml/kg/hour
- Monitor blood pressure
- Adequate nutrition
- Follow up care



References

- KDIGO Clinical Practice Guideline for Acute Kidney Injury (2012). International Society of Nephrology. Vol 2(1). https://kdigo.org/guidelines/acute-kidney-injury/
- Gregory, M.J. (2007). “Acute Renal Failure”. Comprehensive Hospital Medicine. Elsevier. pp:687-701.
- Selewski, D.T. and Symons, J.M. (2014). Acute Kidney Injury. Pediatrics in Review. 35(1) pp30-44.

THANK YOU!