Early Recognition of AKI²

- KDIGO Criteria

Avoid Nephotoxic Drugs

- Antimicrobials, contrast, NSAIDs

Achieve Normoglycemia⁶

- <180mg/DL

Avoid Hypotension ⁸,9

- Contributing factors: hypovolemia, venodilation from anesthetics, PPV, inflammation

OB Considerations

- CKD affects an estimated 3% of pregnant women ¹⁵
- Physiologic changes in pregnancy make defining and measuring AKI challenging ¹⁴
- Anesthetic considerations should be tailored to physiologic changes in kidney disease: increased risks of bleeding, aspiration pneumonia, and difficult airway ¹⁵,16
- Avoidance of nephotoxic drugs ¹⁵

Cardiac Considerations

- 25-50% of patients develop AKI after cardiac surgery ¹⁷,18,19,20
- Cardiopulmonary bypass introduces insults to kidneys: non-pulsatile blood flow, hemodilution, hemolysis releases of free hemoglobin & iron, hypothermia ²¹
- Assess patient risk factors ²², maintain glucose (<180mg/DL) ²³-²⁷, hold ACE and ARBs ²⁸-²⁹, avoid hypotension using vasopressors and balanced crystalloids ³¹-³２, monitor serum creatinine and urine output postoperatively to recognize AKI ³¹

Pediatric Considerations

- It is difficult to determine rates of AKI incidence among children and neonates due to the lack of a standardized AKI definition. ³¹-³₂
- Avoid Nephrotoxic drugs such as antimicrobials, contrast and NSAIDs in patients at increased risk for AKI. ³³
- 86% of children with congenital heart disease undergoing cardiac surgery have postoperative AKI.³³
- Maintain normovolemic state during surgery to reduce incidence of postoperative AKI: Overtransfusion of blood products is predictive of developing AKI. Hypovolemia causing decreased perfusion to kidneys causes renal ischemic damage. ³⁴

Perioperative Acute Kidney Injury Prevention

- Identify patients at risk²
  - Patient risk factors
  - Procedural risk factors
  - Intraoperative risk

GFR Criteria | Urine output criteria
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1 | Increased creatinine x1.5-1.9 from baseline or ≥ 0.3 mg/dl  
   | UO <0.5ml/kg/hr for 6-12hr
2 | Increased creatinine x2.0-2.9 from baseline  
   | UO <0.5ml/kg/hr ≥ 12h
3 | Increased creatinine x3 from baseline OR Scr ≥ 4.0mg/dl OR RRT  
   | UO < 0.3 ml/kg/hr for ≥ 24h  
   | or anuria ≥ 12h

Diagnostic criteria for AKI:
- Scr increase ≥0.3mg/dl within 48h OR
- Scr increase ≥1.5 times baseline, which is known or presumed to have occurred within the last 7 days OR
- Urine volume < 0.5 ml/kg for 6h

For more information, see complete Avoiding Kidney Injury Toolkit at https://mpog.org/quality/toolkits/