

KDIGO AKI Criteria

GFR Criteria

Urine output criteria

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

Diagnostic criteria for AKI:

- SCr increase ≥ 0.3 mg/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

KDIGO¹

For more information, see complete Avoiding Kidney Injury Toolkit at

<https://mpog.org/quality/toolkits/>

Pediatric Considerations

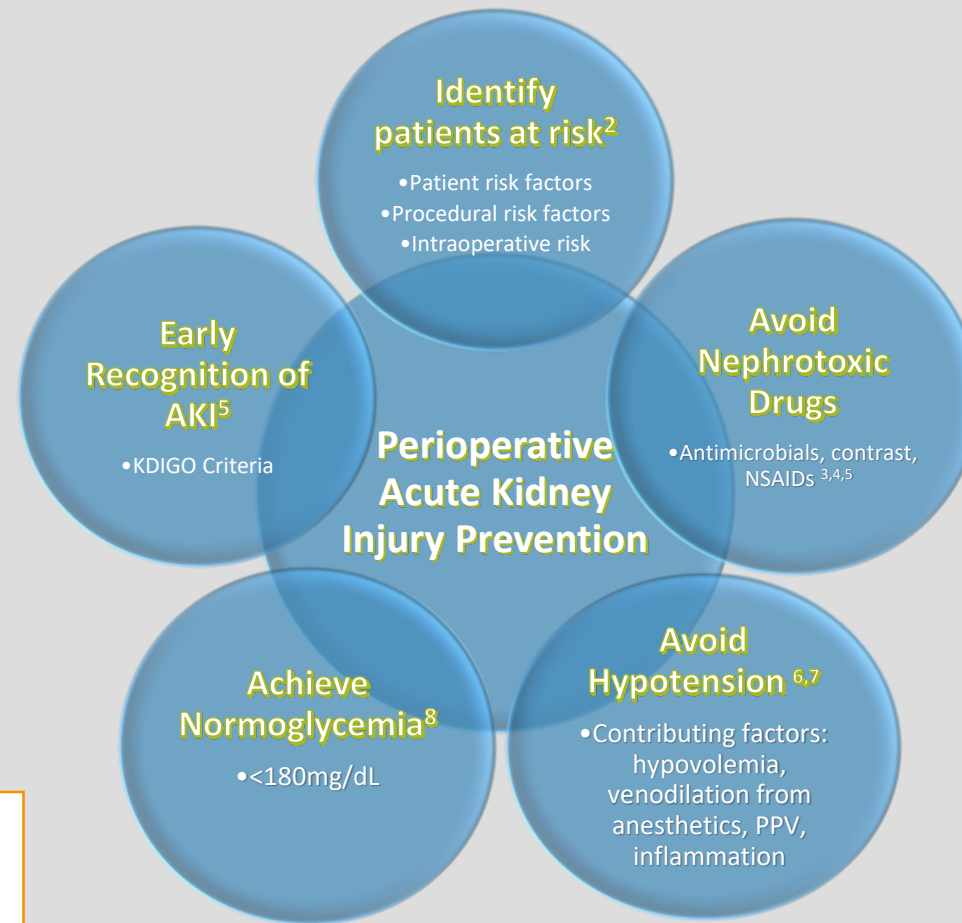
- It is difficult to determine rates of AKI incidence among children and neonates due to the lack of a standardized AKI definition.³¹⁻³²
- Avoid Nephrotoxic drugs such as antimicrobials, contrast and NSAIDs in patients at increased risk for AKI.⁵
- 86% of children with congenital heart disease undergoing cardiac surgery have postoperative AKI³³
- 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

OB Considerations

- CKD affects an estimated 3% of pregnant women¹³
- Physiologic changes in pregnancy make defining and measuring AKI challenging¹⁴
- Anesthetic considerations should be tailored to physiologic changes in kidney disease: increased risks of bleeding, aspiration pneumonitis, and difficult airway^{15,16}
- Avoidance of nephrotoxic drugs¹⁵

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, hypothermia²¹
- Assess patient risk factors²², maintain glucose (<180 mg/dL)²³⁻²⁷, hold ACE and ARBs²⁸⁻²⁹, avoid hypotension using vasopressors and balanced crystalloids^{21,30}, monitor serum creatinine and urine output postoperatively to recognize AKI.²¹



Identify patients at risk²

- Patient risk factors
- Procedural risk factors
- Intraoperative risk

Avoid Nephrotoxic Drugs

- Antimicrobials, contrast, NSAIDs^{3,4,5}

Avoid Hypotension^{6,7}

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

Early Recognition of AKI⁵

- KDIGO Criteria

Achieve Normoglycemia⁸

- <180 mg/dL



Patient Risk Factors^{2,9,10,11}

- Preexisting kidney disease
- Chronic vascular disease
- Cardiac failure/decompensation
- Diabetes
- Mechanical ventilation
- Major surgery
- HTN
- PVD
- CHF
- Sepsis
- Ascites
- Cerebrovascular disease
- Renal insufficiency
- Age >65
- CKD
- COPD
- BMIII



Intraoperative Risk Factors^{10,11,12}

- Hemodilution, HGB level, transfusion, inadequate O2 delivery, diuretics, vasopressors and inotropes, selective renal ischemia reperfusion injury, intraoperative hypertension



Other Procedural Factors^{10,11,12}

- Duration of surgery, intraperitoneal surgery, transplantation of solid nonrenal organs, hemodilution, use of intraaortic balloon pump, intraabdominal hypertension, emergency surgery, bleeding complications

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