Management of Acute Kidney Injury (AKI)

OBJECTIVE
The objective of this Clinical Practice Guideline (CPG) is to provide evidence-based practice recommendations for the treatment of Acute Kidney Injury (AKI), formerly known as acute renal failure (ARF). The new terminology enables healthcare professionals to consider the disease as a spectrum of injury. The term ARF is now reserved for severe AKI, usually implying the need for renal replacement therapy. The CPG discusses care management for Members with AKI, including Member treatment goals and assistance with implementing lifestyle modifications. Behavioral health implications are also discussed. In addition, the CPG outlines the organizations that WellCare aligns with regarding AKI and relevant Measureable Health Outcomes. This CPG is developed to respond to a high rate of readmission related to AKI for the WellCare population. Acute kidney injury (AKI) is common (an estimated 1 in 5 hospitalizations), associated with a more than fourfold increased likelihood of death, and there are reports of gaps in the quality of care in several clinical settings despite publication of evidence-based guidelines.1,2,3,4,5

OVERVIEW
Acute kidney injury (AKI) is the rapid decline in the glomerular filtration rate (GFR) resulting in retention of nitrogenous wastes, primarily creatinine and blood urea nitrogen. AKI causes a build-up of waste products, specifically nitrogenous waste products, in the blood and challenges the kidneys to maintain fluid balance. Refer to information outlined in the “Hierarchy of Support” section below for specific clinical definitions. Causes include:1,6,7

- Decreased blood flow – examples: low blood pressure, blood or fluid loss, heart attack, heart failure, burns, overuse of NSAIDs
- Direct kidney damage - examples: sepsis, scleroderma, vasculitis
- Blockage of urinary tract – examples: enlarged prostate, kidney stones

Hierarchy of Support

GUIDELINE HIERARCHY
CPGs are updated annually or as necessary due to updates made to guidelines or recommendations by the Kidney Disease: Improving Global Outcomes (KDIGO), Acute Dialysis Quality Initiative (ADQI), and the Acute Kidney Injury Network (AKIN). When there are differing opinions noted by national organizations, WellCare will default to the member’s benefit structure as deemed by state contracts and Medicaid / Medicare regulations. If there is no specific language pertaining to the topic of AKI, WellCare will default (in order) to the following:

- National Committee for Quality Assurance (NCQA);
- United States Preventive Services Task Force (USPSTF), National Quality Strategy (NQS), Agency for Healthcare Research and Quality (AHRQ);
- Specialty associations, colleges, societies, etc. (e.g., American Academy of Family Physicians, American Congress of Obstetricians and Gynecologists, American Cancer Society, etc.).

Clinical Practice Guideline

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Links to websites within the CPGs are provided for the convenience of Providers. Listings do not imply endorsement by WellCare of the information contained on these websites. NOTE: All links are current and accessible at the time of MPC approval.

WellCare aligns with KDIGO, ADQI, and AKIN on the topic of AKI. Highlights from their publications are noted below.

**KIDNEY DISEASE: IMPROVING GLOBAL OUTCOMES**

The Kidney Disease: Improving Global Outcomes (KDIGO) Clinical Practice Guidelines for AKI propose a consensus definition utilizing the 48-hour timeframe from AKIN for a 0.3 mg/dL change in serum creatinine, while using a seven-day timeframe for the 50 percent change in serum creatinine originally applied by the RIFLE criteria, while retaining the tripartite staging of both systems. According to KDIGO, AKI is defined by any of the following:

- Increase in serum creatinine by ≥0.3 mg/dL (≥26.5 micromol/L) within 48 hours; or
- Increase in serum creatinine to ≥1.5 times baseline, which is known or presumed to have occurred within the prior seven days; or
- Urine volume <0.5 mL/kg/h for six hours

The KDIGO criteria only utilize changes in serum creatinine and urine output, not changes in glomerular filtration rate (GFR) for staging, with the exception of children under the age of 18 years, for whom an acute decrease in estimated GFR (eGFR) to <35 mL/min per 1.73 m² is included in the criteria for stage 3 AKI. KDIGO suggested that patients be classified according to criteria that result in the highest (ie, most severe) stage of injury. Using the KDIGO criteria, AKI is staged as follows:

- **Stage 1** – Increase in serum creatinine to 1.5 to 1.9 times baseline, or increase in serum creatinine by ≥0.3 mg/dL (≥26.5 micromol/L), or reduction in urine output to <0.5 mL/kg per hour for 6 to 12 hours.
- **Stage 2** – Increase in serum creatinine to 2.0 to 2.9 times baseline, or reduction in urine output to <0.5 mL/kg per hour for ≥12 hours.
- **Stage 3** – Increase in serum creatinine to 3.0 times baseline, or increase in serum creatinine to ≥4.0 mg/dL (≥353.6 micromol/L), or reduction in urine output to <0.3 mL/kg per hour for ≥24 hours, or anuria for ≥12 hours, or the initiation of renal replacement therapy, or, in patients <18 years, decrease in eGFR to <35 mL/min per 1.73 m².

The KDIGO guideline covers recommendations for risk assessment, evaluation, prevention, and treatment. In addition, chapters related to treatment cover pharmacological approaches to prevent or treat AKI as well as avoiding nephrotoxicity, and management of renal replacement for kidney failure from AKI. To review the full guideline, visit: [http://www.kdigo.org/clinical_practice_guidelines/pdf/KDIGO%20AKI%20Guideline.pdf](http://www.kdigo.org/clinical_practice_guidelines/pdf/KDIGO%20AKI%20Guideline.pdf).

**ACUTE DIALYSIS QUALITY INITIATIVE**

The Acute Dialysis Quality Initiative (ADQI) proposed a graded definition of AKI called the RIFLE criteria. The RIFLE criteria consists of three graded levels of kidney dysfunction (Risk, Injury, and Failure), based upon either the magnitude of increase in serum creatinine or urine output, and two outcome measures (Loss and End-stage renal disease [ESRD]). Conceptually, the first three of these criteria were considered to be graded definitions of AKI, providing increasing specificity at the expense of sensitivity, rather than “staging” criteria for patients meeting a minimal definition of AKI. To review the RIFLE criteria, visit: [http://www.adqi.org/Upload/Reports/ADQI_2/ADQI2g1.pdf](http://www.adqi.org/Upload/Reports/ADQI_2/ADQI2g1.pdf).

**ACUTE KIDNEY INJURY NETWORK**

A modification of the RIFLE criteria was developed by the Acute Kidney Injury Network (AKIN), providing both diagnostic criteria and a staging system for acute kidney injury. AKIN modified the RIFLE criteria in order to include less severe AKI, to impose a time constraint of 48 hours, and to allow for correction of volume status and obstructive causes of AKI prior to classification. For more information on the AKIN criteria, visit: [http://www.akinet.org/akinstudies.php](http://www.akinet.org/akinstudies.php).

**Evidence Based Practice**

CMS and NCQA have not published metrics related to AKI. There are no nationally recognized quality measures supporting AKI in the United States. However, due to the frequency and high risk for adverse outcomes of acute kidney injury (AKI) there is growing support for AKI as a target for clinical quality indicators.
The National Health Services (NHS) England noted in its 2015-16 publication, Commissioning for Quality and Innovation (CQUIN), has issued a quality indicator with the goal of improving the follow up and recovery for individuals who have sustained AKI, reducing the risks of readmission, re-establishing medication for other long term conditions, and improving follow up of episodes of AKI. This indicator description is offered in this CPG only as a supporting reference for providers and clinicians. The CQUIN indicator measures the percentage of patients with AKI treated in an acute hospital whose discharge summary includes:

- Stage of AKI (a key aspect of AKI diagnosis);
- Evidence of medicines review having been undertaken (a key aspect of AKI treatment);
- Type of blood tests required on discharge; for monitoring (a key aspect of post discharge care); and
- Frequency of blood tests required on discharge for monitoring (a key aspect of post discharge care).

**Care Management**

The goals for Care Management is to support the member's ability to self-manage the underlying condition of AKI, minimize symptoms and complications of AKI, and remove barriers preventing the member from achieving those goals. Primary symptoms of AKI to educate member on include:

**Call physician right away to report urgent symptoms:**
- Urinating less, or not urinating at all
- Blood in the urine, or urine that is red or brown
- Swelling, especially in the legs or feet
- Vomiting, or not feeling hungry
- Feeling weak, or getting tired easily

**Seek emergency care for:**
- Shortness of breath
- Acting confused, or not acting like themselves
- Chest pain or pressure
- Seizures

To address the underlying cause of AKI (decreased blood flow, direct kidney damage, or blockage of urinary tract), the following CPGs may be referenced: Cardiovascular Disease (HS-1002), Congestive Heart Failure (HS-1003), and Managing Infections (HS-1037).

**Integrated care management of AKI involves:**
- Guiding the Member with management of the underlying cause of AKI per physician treatment plan;
- Supporting the Member's lifestyle changes needed to maintain or improve kidney function;
- Assisting the Member with renal replacement therapy regime adherence, if appropriate;
- Ensuring efficacy of and adherence to medications and identify any potential nephrotoxicity;
- Vaccinating against influenza and pneumonia; and
- Assess for risk of depression and poor coping skills and share with appropriate provider(s) if risks identified.

**MEASURABLE HEALTH OUTCOMES**

Targeted Health Outcomes (Extended Program Goals) result from successful member self-management (see Case Management Objectives).

1. The Member experiences no symptoms requiring acute medical care and intervention. The case manager compares the recent utilization frequency for AKI (and/or ARF) to the frequency prior to CM engagement. CM monitors for ED and inpatient authorization/utilization related to the primary diagnosis of AKI (and/or ARF). In absence of ED and inpatient utilization, authorizations and claims data, or to otherwise demonstrate less frequent need for acute medical intervention, CM may use Provider and/or Member narrative.

2. The Member reports fewer or lessening symptoms over a specific period of time after the start of Case Management engagement. Member-specific goals should reference member's individual symptoms. Compare member's responses to urological symptom assessment questions on initial and subsequent assessments.

3. The Member's serum creatinine improves to ≤1.2 mg/dL, or is reduced to within .1mg/dL of baseline, and is maintained within normal ranges (0.6 to 1.2 mg/dL). CM compares creatinine documented in provider records, assessments and care plan, and monitoring data sources pre- and post-engagement at 6-12 months. In absence of these data sources, CM may use Provider and/or Member narrative and/or HRA data may be used.
CASE GOALS

Case Goals should target specific care gaps and/or adherence issues, and measure the member’s progress towards self-management and adherence which will lead to the targeted health outcomes above. Examples:

1. The Member’s prescription refills demonstrate at least an 80% adherence rate (verified by claims or member/provider narrative) over last 30 days.
2. The Member is adherent to routine labs (such as serum testing and urinalysis), and other diagnostics prescribed by the physician (verified by claims or member/provider narrative) over last 30 days.
3. Specific for Members requiring renal replacement therapy: The Member describes daily/weekly routine that demonstrates adherence to physician-prescribed renal replacement therapy regimen, including diet and fluid intake management, vascular/peritoneal access care, and frequency of renal replacement therapy.
4. Specific for Members requiring hospitalization: The Member participates in provider follow-up visit within 7 days of hospital discharge.

Other measurable health outcomes may apply based on the underlying condition causing AKI in the individual. Refer to those other CPGs for additional options for health outcomes, frequently cardiovascular disease and heart attack, congestive heart failure or systemic infection (including sepsis).

CASE MANAGEMENT OBJECTIVES

Case Management Objectives should focus on improving the member’s self-management skills including:

- Following physician-recommended diet that addresses protein, sodium, potassium, phosphorus, and calcium intake
- Managing daily fluid intake to match what the physician recommends
- Taking medications as prescribed. Avoid NSAIDs and other nephrotoxic drugs, and always check with the physician before taking any drugs not prescribed by the physician
- Check weight daily and watch for swelling in ankles, feet and abdomen to catch fluid imbalances early
- Understanding characteristics of urine to report it to the physician (dark, foamy/fizzy, pick/reddish)
- Adhering to provider visit(s) as scheduled
- Early identification of oncoming symptoms (listed above) to report timely to physician
- Seeking immediate care for emergent symptoms (listed above)

The care team should also conduct risk screening and treat anxiety and depression, if applicable.

OTHER CONSIDERATIONS

Significant mental illness or substance abuse can impact the member’s ability to comprehend and actively participate in the treatments for AKI, especially when symptoms require treatment by dialysis. These unique may include diminished self-care, increased incidence of risky behaviors, and exposure to potentially nephrotoxic drugs to treat the BH condition. Engagement, education, and support may be needed continuously while the member is undergoing treatment for AKI when a BH condition is co-occurring to support recovery and minimize risk of recurrent episodes.

Examples of diminished self-care that can cause dehydration and lead to or exacerbate AKI include:

- Lack of drive or motivation to care for themselves such as in severe depressive illness
- Lack of ability to care for themselves, such as in dementia
- Lack of adequate nutritional intake, such as in anorexia nervosa
- Promotion of a dehydrated state through inappropriate use of diuretics or laxatives, such as in bulimia nervosa.

Examples of drugs that must be monitored closely because of potential nephrotoxicity include phenytoin, benzodiazepines, haloperidol, and atypical antipsychotics. Lithium is relatively contraindicated in AKI due to its high propensity for nephrotoxicity.

Examples of risky behaviors that can lead to AKI include use of recreational drugs, such as ketamine, synthetic cannabinoids and ‘legal highs’. Self-harm by way of poisoning can also cause AKI through overdose of medications or use of substances such as antifreeze.

Conversely, AKI may contribute to behavioral health issues. Depression, anxiety, suicide and delirium are common complications observed in patients with renal failure.
MEMBER EDUCATIONAL RESOURCES

WellCare contracts with Krames/StayWell for Member educational materials utilized by Case Managers. Items are available to review with Members to address knowledge gaps. Case Managers verbally educate Members on the topics below related to AKI.

- Healthy Kidneys
- Kidney Problems
- Kidney Failure: Your Health Care Team
- Coping with Kidney Failure
- Caring for Yourself When You Have Kidney Failure
- Monitoring Kidney Health
- Treatment Options for Kidney Failure
- Understanding Fluids
- Limiting Fluids
- Getting the Right Amount of Protein
- Choosing the Right Protein for Your Body
- Eating a Safe Amount of Potassium
- Reducing Potassium in Foods
- Balancing Calcium and Phosphorus
- Eating Less Sodium
- Avoiding High-Sodium Foods
- Taking Iron for Anemia
- Finding Support for Kidney Disease
- Exercise to Help Your Kidneys
- Living with High Blood Pressure and Kidney Disease

These materials are in the approval process and will be available for member educational mailing in the future. Providers may wish to research the titles above related to AKI that Case Managers utilize with Members.

PHARMACOLOGY

Pharmacological management of AKI includes the following:18

- Do not routinely offer loop diuretics to treat acute kidney injury.
- Consider loop diuretics for treating fluid overload or edema while:
  - An adult, child or young person is awaiting renal replacement therapy, or
  - Renal function is recovering in an adult, child or young person not receiving renal replacement therapy.
- Do not offer low-dose dopamine to treat acute kidney injury.

Related WellCare Guidelines

In addition to the information contained in this document, please reference the following CPGs to address the underlying cause of AKI: Cardiovascular Disease (HS-1002), Congestive Heart Failure (HS-1003), and Managing Infections (HS-1037).

NOTE: Clinical Policies can be accessed by going to www.wellcare.com – select the Provider tab, then “Tools” and “Clinical Guidelines”.

References


### Disclaimer

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### Medical Policy Committee Approval History

**Date**  
1/27/2017

**History and Revisions by the Medical Policy Committee**

- Approved by MPC. New. Developed with CM, DM, QI, UM, BH and the Chief Medical Directors.