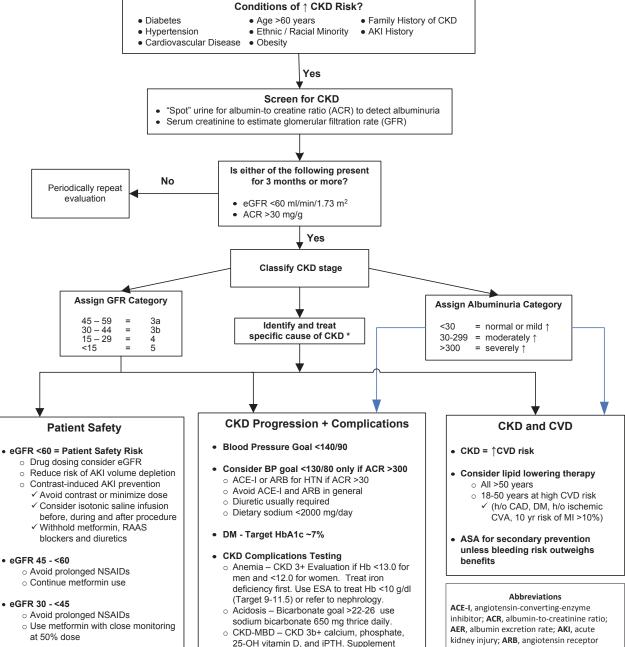


# How to Manage Your CKD Patients



kidney injury: ARB, angiotensin receptor blocker; ASA, acetylsalicylic acid (aspirin); A stage, Albuminuria category; BP, blood pressure; CAD, coronary artery disease; CKD, chronic kidney disease; CKD-MBD, chronic kidney disease mineral and bone disorder; CVA. cerebrovascular accident: CVD. cardiovascular disease; DM, diabetes mellitus; eGFR, estimated glomerular filtration rate; ESA, erythropoietin-stimulating agent; Hb, hemoglobin; HTN, hypertension; iPTH, intactparathyroid hormone; NSAIDs, nonsteroidal anti-inflammatory drugs; 25-OH vitamin D, 25-OH vitamin D; PICC, peripherally inserted central catheter line; PT INR, prothrombin time, international normalized ratio; RAAS, renin angiotensin aldosterone system

 Cause of CKD is classified based on presence or absence of systemic disease and the location within the kidney of observed or presumed pathologic-anotomic findings.

• eGFR <30

o Avoid any NSAIDs

o Avoid metformin

instead

o Avoid bisphosphonates

o Avoid PICC; lines use single and

double lumen central catheters

o Monitor PT INR closely given

increased risk of warfarin

anticoagulation bleeding

Nephrology Referral

- o eGFR <30 or ACR >300 mg/g
- 25% decrease in eGFR (AKI or progressive CKD may be difficult to distinguish)

· Vaccination for influenza + pneumococcus

vitamin D deficiency. If hyperphosphatemia or

significant iPTH elevation refer to nephrology.

- o 2º hyperparathyroidism
- o Persistent hyperkalemia / metabolic acidosis
- Recurrent kidney stones
- o Unexplained hematuria
- $_{\odot}\,$  Hereditary or unknown cause of CKD

# **How to Evaluate for Chronic Kidney Disease**

# Know the criteria for chronic kidney disease (CKD).

- Abnormalities of kidney structure or function, present for >3 months, with implications for health
- Either of the following must be present for >3 months:
  - Markers of kidney damage (one or more)
  - GFR <60 ml/min/1.73 m<sup>2</sup>

### Screen for CKD with two simple tests.

- "Spot" urine for albumin-to-creatinine ratio (ACR) to detect albuminuria
- Serum creatinine to estimate glomerular filtration rate (GFR)

#### What if CKD is detected?

- Classify CKD based on cause, GFR category, and albuminuria category
- Implement a clinical action plan based on patient's CKD classification (see flip side)
  - Consider co-management with a nephrologist if the clinical action plan cannot be carried out
  - Refer to a nephrologist when GFR <30 mL/min/1.73 m<sup>2</sup> or ACR >300 mg/g
- Learn more at www.kidney.org/professionals

#### Why should you classify CKD?

- To have a more precise picture of each patient's condition
- To guide decisions for testing and treatment
- To evaluate patient's risk of progression and complications
- Because neither the category of GFR nor the category of albuminuria alone can fully capture prognosis of CKD

#### References

Inker LA, Astor BC, Fox CH, et al. KDOQI US commentary on the 2012 KDIGO clinical practice guideline for the evaluation and management of CKD. *Am J Kidney Dis.* 2014;63(5):713-735.

Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. *Kidney Inter*, Suppl. 2013;3:1-150.



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## How do you classify CKD?

- Identify cause of CKD\*
- Assign GFR category
- Assign albuminuria category
- \*Cause of CKD is classified based on presence or absence of systemic disease and the location within the kidney of observed or presumed pathologic-anotomic findings.

	GFR categories in CKD		
Category	GFR (ml/min/1.73 m²)	Terms	
G1	≥90	Normal or high	
G2	60-89	Mildly decreased*	
G3a	45-59	Mildly to moderately decreased	
G3b	30-44	Moderately to severely decreased	
G4	15-29	Severely decreased	
G5	<15	Kidney failure	

\*Relative to young adult level.

In the absence of evidence of kidney damage, neither GFR category G1 nor G2 fulfill the criteria for CKD.

Albı	Albuminuria categories in CKD		
Category	ACR (mg/g)	Terms	
A1	<30	Normal to mildly increased	
A2	30-300	Moderately increased*	
А3	>300	Severely increased <sup>†</sup>	

\*Relative to young adult level. ACR 30–300 mg/g for >3 months indicates CKD.

†Including nephrotic syndrome (albumin excretion ACR >2220 mg/g)

#### Abbreviations

A Stage, albuminuria category; ACE-I, angiotensin-converting-enzyme inhibitor; ACR, albumin-to-creatinine ratio; AER, albumin excretion rate; AKI, acute kidney injury; ARB, angiotensin receptor blocker; ASA, acetylsalicylic acid (aspirin); CAD, coronary artery disease; CKD, chronic kidney disease; CKD-MBD, chronic kidney disease mineral and bone disorder; CVA, cerebrovascular accident; CVD, cardiovascular disease; DM, diabetes mellitus; GFR, estimated glomerular filtration rate; ESA, erythropoietin-stimulating agent; G Stage, GFR category; Hb, hemoglobin; HTN, hypertension; iPTH, intact-parathyroid hormone; NSAIDs, nonsteroidal anti-inflammatory drugs; PICC, peripherally inserted central catheter line; PT INR, prothrombin time, international normalized ratio; RAAS, renin angiotensin aldosterone system.