CHRONIC KIDNEY DISEASE (CKD)

Provider's guide to diagnose and code CKD

Chronic Kidney Disease is a heterogeneous group of disorders characterized by alterations in kidney structure or function for three or more months.[1]

Patients with abnormal eGFRs are at significantly increased risk for all-cause and cardiovascular mortality, ESRD, acute kidney injury and CKD progression in comparison to patients with normal eGFRs.[2] **With this in mind, it is recommended that primary care providers proactively identify and manage early stage CKD to reduce the risk of disease progression and associated complications.**

Clinical criteria for diagnosing CKD

The clinician should consider linking CKD to other medical conditions such as hypertension (ICD-10: I12.0, I12.9, I13.0, I13.10, I13.11, I13.2), diabetes (E10.22 - type 1 DM, E11.22 - type 2 DM) and anemia (D63.1). CKD diagnostic criteria include duration of abnormal glomerular filtration rate (GFR) and/or indicators of kidney damage (e.g., albuminuria, urine sediment abnormalities, or structural abnormalities detected by imaging).[1]

When evaluating lab findings (e.g., creatinine, BUN, electrolytes, etc.), clinicians should consider context (e.g., patient's age, acute kidney injury/acute renal failure, malnutrition, major limb amputation, & cirrhosis) and transient causes (e.g., volume depletion, exposure to nephrotoxic substances, etc.)

The chronicity for CKD may be documented or inferred by evaluating past measures of GFR or proteinuria past urine dipsticks and sediment examination abnormal renal image findings (e.g., reduced kidney volume, reduction in cortical thickness, and cysts) or prospectively documenting abnormal GFRs and/or proteinuria for three or more months.

Staging CKD assists in clinical management, including risk stratification for disease progression and development of complications. The staging criteria include disease cause, Albuminuria category and GFR category.

Currently, the most common indirect measure of glomerular filtration is based upon serum creatinine. Serum creatinine is used to calculate GFR in individuals with stable kidney function (e.g., normal kidney function or CKD). GFR estimation (eGFR) equations incorporate known demographic and clinical variables that address unmeasured physiologic factors affecting serum creatinine concentration thereby GFR estimates. Three equations, Cockcroft-Gault equation, MDRD study equation, and CKD-EPI equation, are used with recognized limitations.

The National Kidney Foundation recommends using the **2009 CKD-EPI equation to calculate eGFR** for the general population and individuals with GFR near or above 60mL/min per 1.73m. A calculator for the CKD-EPI equation is found at **www.kidney.org/professionals/kdoqi/gfr_calculator.cfm**.

Clinical diagnosis and staging - summary

- **Screen annually for CDK** – early identification reduces risk of disease progression.
- **CKD stages 1 and 2** require markers of abnormal kidney function for greater than three months. A common clinical indicator of abnormal kidney function is proteinuria. eGFR may be normal.
- **CDK stages 3 and 4** – require abnormal eGFR for greater than three months.

The table on the back of this document describes CKD stage given eGFRs and proteinuria as a marker for kidney damage when applicable.

Clinical Recommendations Overview

(Refer to the table on the back of this document for specific recommendations.)

Avoid nephrotoxic substances – e.g., NSAIDs, aminoglycosides and iodinated radiographic contrast.

Consider starting ACE Inhibitors or ARBs for BP control and proteinuria reduction for renal protection. ACEIs and ARBs contribute to decrease in GFR. Consider dose adjustment and/or consult with nephrologist if GFR has a consistent reduction of greater than 25-30%.

Consider consulting with nephrologist at any point in the disease progression.

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Plan of Care for CKD Stages I-5

Adapted from Henry Ford Health System Chronic Kidney Disease Clinical Practice Recommendations

CKD Stage (ICD 10-CM)	Description (GFR – mL/min/1.73m2)	Clinical presentation/ clinician action	Monitoring/testing	Treatment considerations
None/ normal	GFR > 90	**Often risk factors present** **SCREEN** for CKD with GFR **ADDRESS** – co-morbidities **START** – CKD risk reduction	**Every 12 months** • BP, Fasting lipids, electrolytes, glucose, BUN, Cr, eGFR • UA for hematuria or proteinuria & microscopic exam	Tobacco cessation; Weight reduction; Aspirin approximately 75mg q day **TARGETS** • BP: 140/90 mmHg (if proteinuria > 3g/24hrs target 130/80) • LDL-C < 70-100 mg/dL; Triglycerides < 150 mg/dL • FBS <130 mg/dL, HbA1C < 7%
1 N18.1	Kidney damage and GFR > 90 AER > 30 mg/ 24 hours; ACR > 30 mg/g [> 3 mg/mol]	**Often asymptomatic** **IDENTIFY** etiology of CKD **DIAGNOSE & TREAT** CKD risk factors and comorbid conditions	**Every 12 months** • BP, Fasting lipids, Electrolytes, glucose, BUN, SCr, eGFR • UA for hematuria/ proteinuria & microscopic exam • UPC if non-DM • UACR if DM	Consult nephrology consult if eGFR declines by > 4mL/min/yr **TARGETS** • BP: 130/80 mmHg • LDL-C < 70-100; Triglycerides < 150; Non HDL-C<130 mg/dL • Proteinuria (UPC<0.2 or UACR < 30 mg/g) – consider ACEI/ARB
2 N18.2 (mild)	Kidney damage and GFR 60-89 AER > 30 mg/24 hours; ACR > 30 mg/g [> 3 mg/mol] Most lower GFRs are age related. If no proteinuria no further evaluation.	**Mild complications** **ESTIMATE** CKD progression rate **DIAGNOSE & TREAT** CVD risk factors and co-morbid conditions	**Every 3-12 months** • BP, UACR or UPC **Every 6-12 months** • Electrolytes, glucose, BUN, SCr, eGFR **Every 12 months** • If hemoglobin < 10-12 - CBC, reticulocyte count, TSAT, ferritin **CONSIDER** – Ca/P/PTH/25(OH) D evaluation	Avoid nephrotoxins; rule out AKI/ARF (e.g., obstruction) **TARGETS** • BP: 130/80 mmHg • LDL-C < 70-100; Triglycerides < 150; Non HDL-C<130 mg/dL • Hb 10-12 g/dL, TSAT > 20%, ferritin > 100 ng/mL • UACR < 30 mg/g or UPC < 0.2 with ACEI/ARB
3 N18.3 (moderate)	IIIA – GFR 45-59 IIIB – GFR 30-44 Complications more frequent Proteinuria is a serious CV risk factor and prognostic importance for progression of CKD	**Moderate complications** **ESTIMATE** CKD progression rate **DIAGNOSE & TREAT** CVD risk factors and co-morbid conditions Kidney image study (e.g., US or CT) **CONSIDER** nephrology consult	**Baseline** • Ca/P/PTH/Alk phos/25(OH)D, repeat depending upon baseline, progression, response to treatment • eGFR **Every 3-6 months** • CBC: If Hb < 10 g/dL then q 1-3 months until Hb 10-12 g/dL then q 3 months; if Hb <13 g/dL in male or 12 g/dL in female, collect TSAT and ferritin. Collect again after treatment. **Every 3-12 months** • BP, Electrolytes, glucose, BUN, SCr, eGFR **Every 6 -12 months** • UPC or UACR **EVALUATE** for extraskeletal calcification	Avoid of nephrotoxic meds (e.g., NSAIDs) and adjust dosing based on renal function; rule out ARF (e.g., obstruction) Nutritional assessment – anytime once Stage III-V **TARGETS** • Hb: 10-12 g/dL, TSAT > 20%, ferritin >100 ng/mL with iron and/or erythropoiesis stimulating agent • Ca & P: normal range with P binders (no Ca based P hinder if vascular/valvular calcification) • iPTH: 300-600pg/mL with calcitriol or vitamin D analogs if iPTH progressively increases. • UACR < 30 mg/g or UPC < 0.2 with ACEI/ARB
4 N18.4 (severe)	GFR 15-29 Major increase in CVD risk – equivalent to a major CVD event	**Severe complications** **CONSULT** nephrology **START** discussions kidney replacement therapy **DIAGNOSE & TREAT** CVD risk factors and co-morbid conditions **ADJUST** drug dosages	**Baseline** • Ca/P/PTH/Alk phos/25(OH)D, repeat q 6-12 months **Every 3-6 months** • BP monitoring **Every 3-12 months** • Electrolytes, Glucose, BUN, SCr, eGFR, PC or UACR **EVALUATE** for extraskeletal calcification	Specific patient/family education: kidney replacement therapy modality Immunizations: TIV, PPV-23, HBV (consider Tdap, VZ) Reinforce dietary prescription, Renal-formulated multivitamin Vascular access surgery evaluation, protect dominant arm
5 N18.5	GFR <15 w/o dialysis treatment	**Managed by nephrologist**		
ESRD N18.6	Requires dialysis treatment - use additional code to identify dialysis status (Z99.2)	**Managed by nephrologist**		
N18.9 CKD, unspecified				

Abbreviations

ACEI – angiotensin-converting enzyme inhibitor
AKI – acute kidney injury
anti-RAAS – anti-renin-angiotensin-aldosterone system
ARB – angiotensin II receptor blocker
ARF – acute renal failure
BP – blood pressure
BUN – blood urea nitrogen
Ca – calcium
CKD – chronic kidney disease
Cr – serum creatinine
CVD – cardiovascular disease
DM – diabetes mellitus
FBS – fasting blood sugar
GFR/eGFR – glomerular filtration rate/ estimated glomerular filtration rate
Hb – hemoglobin
HBV ab – hepatitis B virus antibody
P – phosphate
PTH/iPTH – parathyroid hormone/ intact parathyroid hormone
TSAT – transferrin saturation
UA – urine analysis
UACR – urine albumin to creatinine ratio
UPC – urine protein creatinine ratio
US – ultrasound
25(OH)D – 25- hydroxyvitamin D

References
1. (2013) Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group KDIGO 2012 Clinical Practice Guidelines for the Evaluation and Management of Chronic Kidney Disease. Kidney International. Suppl 3, 1-150 http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf Retrieved 1/31/2014
2. Levey A & Inker L (2013). Definition and staging of chronic kidney disease in adults. UpToDate. www.uptodate.com Retrieved 1/30/2014