VA/DoD Clinical Practice Guideline for the Management of Chronic Kidney Disease in Primary Care (2008)

PROVIDER REFERENCE CARDS

Chronic Kidney Disease

CKD

Key Recommendations

1. Diagnostic criteria and identification of early disease.

2. Identification of susceptibility factors (adult patients at increased risk for developing CKD).

3. Identification of progression factors (adult patients at high risk for worsening kidney damage and subsequent loss of kidney function).

4. Evaluation of patients with kidney disease (estimate of GFR, blood pressure, and assessment of proteinuria as a marker of kidney damage).

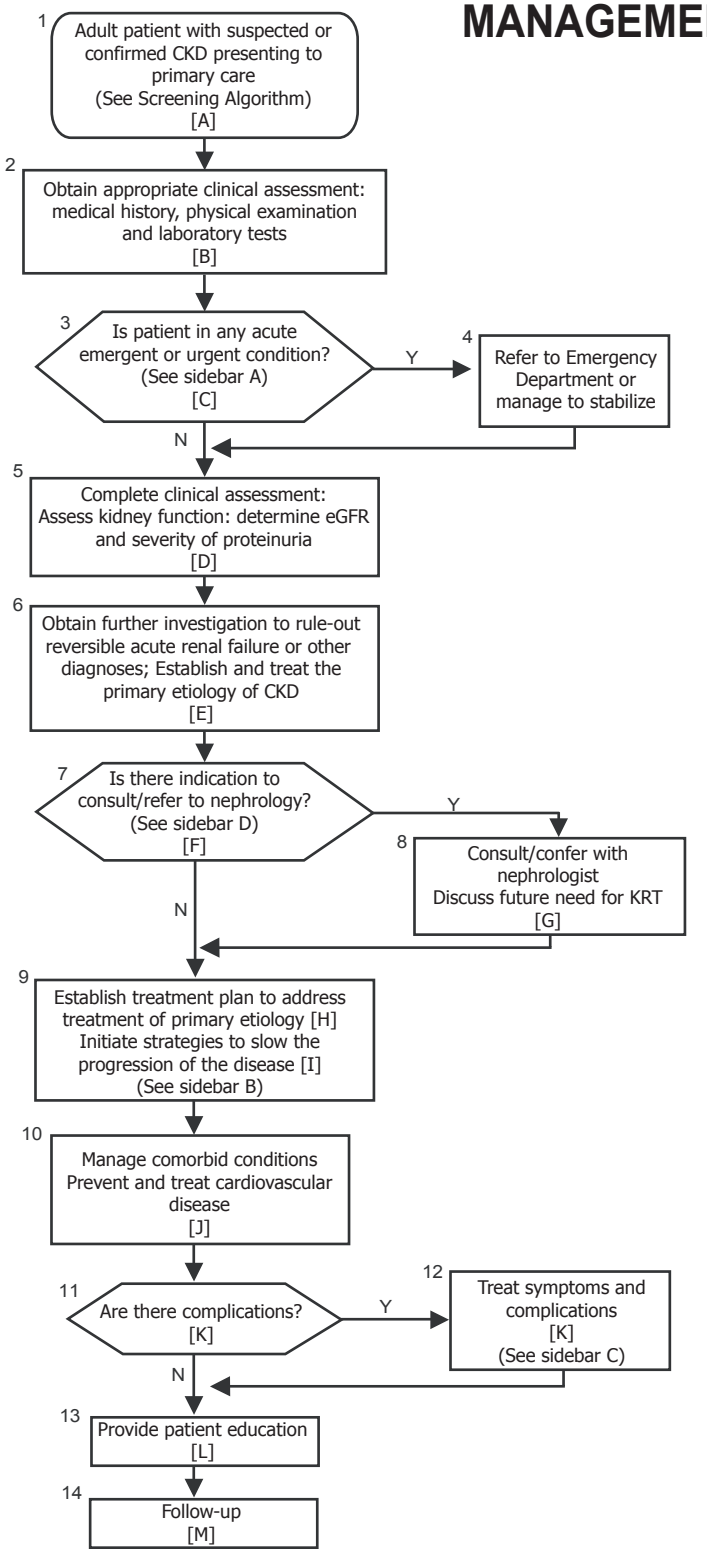
5. Slowing the progression of CKD and prevention of conditions that exacerbate chronic disease.

6. Management of comorbidities.

7. Indication for consultation and referral to a nephrologist.

8. Outline of patient education and preparation for kidney replacement therapy.

MANAGEMENT OF CHRONIC KIDNEY DISEASE IN PRIMARY CARE



Stage	eGFR	Description
1	≥ 90	Kidney damage with normal or increased GFR
2	60 - 89	Kidney damage with mildly decreased GFR
3	30 - 59	Moderately decreased GFR
4	15 - 29	Severely decreased GFR
5	< 15 or dialysis	Kidney failure

Sidebar A: Urgent/Emergent Conditions

- Acute unexplained decline in kidney function
- Heart failure / volume overload
- Hyperkalemia (potassium >6 mEq/L)
- Signs or symptoms of uremia

Sidebar B: Strategies to Slow Progression

1. Control of hypertension
2. Use of ACEI / ARB
3. Control of hyperglycemia
4. Avoid toxic drugs
5. Smoking cessation
6. Control of dyslipidemia

Sidebar C: Prevention and Treatment of Complications

- Metabolic disorders:
  - potassium balance
  - calcium, phosphate balance
  - acidosis
- Anemia
- Volume overload
- Overuse of renally excreted drugs
- Nutrition

Sidebar D: Indications for Nephrology Consultation

1. eGFR <30 ml/min/1.73m ^{2}
2. Rapid decline of GFR
3. Severe complications of CKD (e.g. recalcitrant anemia, calcium or phosphorus abnormalities)
4. Nephrotic range proteinuria (>3.5 grams/24 hours)
5. Hematuria with Proteinuria
6. Underlying cause of CKD is unclear after basic work-up
7. Kidney biopsy is indicated
8. Patient's level of disease exceeds comfort level of primary care provider

ACEI - Angiotensin Converting Enzyme Inhibitor, ARM - Angiotensin II Receptor Blockers,
DM - Diabetes Mellitus, eGFR - Estimbated Glomerular Filtration Rate, KRT - Kidney Replacement Therapy

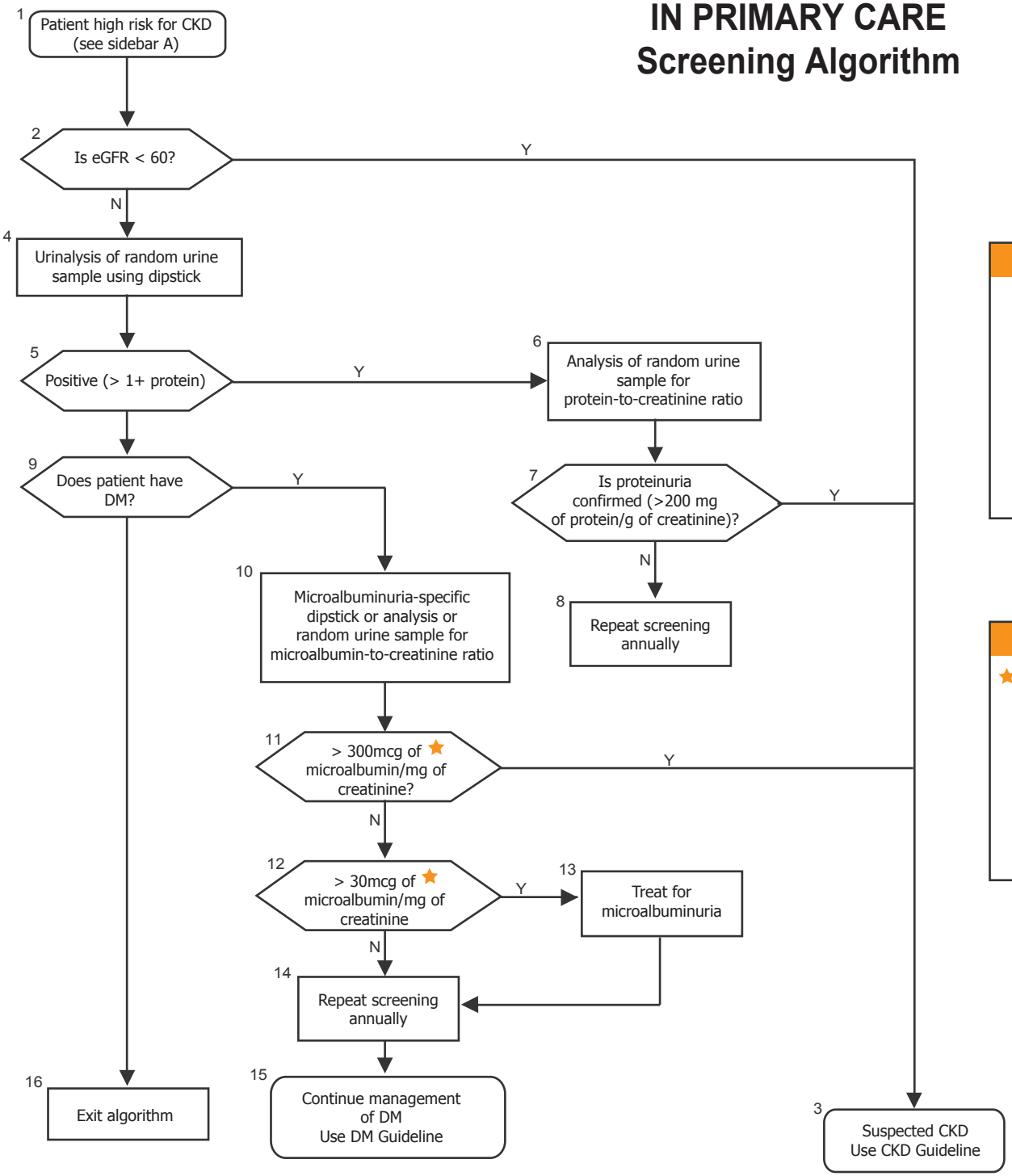
Classification of Chronic Kidney Disease Stages (based on KDOQI, 2002)

Stage	Description	eGFR (ml/min/1.73m)	Common Complications
1	Kidney damage with normal eGFR	Normal or ≥ 90 ml/min/1.73m^2 with other evidence of chronic kidney damage*	Hypertension more frequent than amongst patients without CKD
2	Mild impairment	60 - 89 ml/min/1.73m^2 with other evidence of chronic kidney damage*	Hypertension frequent
3	Moderate impairment	30 - 59 ml/min/1.73m^2	Hypertension common Decreased dietary calcium absorption Reduced renal phosphate excretion Elevation of parathyroid hormone Altered lipoprotein metabolism Reduced spontaneous protein intake Anemia Left ventricular hypertrophy Salt and water retention Decreased renal potassium excretion
4	Severe impairment	15 - 29 ml/min/1.73m^2	As above but more pronounced plus: Metabolic acidosis
5	Established renal failure	< 15 ml/min/1.73m^2 or on dialysis	All the above (with greater severity) plus: Salt and water retention causing edema and apparent heart failure Anorexia Nausea, Vomiting Pruritus (itching without skin disease) Neuropathy, altered mental status

* The "other evidence of chronic kidney damage" may be one of the following:

- Persistent microalbuminuria in a diabetic
- Persistent proteninuria
- Persistent hematuria of renal origin
- Structural abnormalities of the kidneys demonstrated on ultrasound scanning or other radiological tests, e.g., polycystic kidney disease, reflux nephropathy
- Biopsy-proven chronic kidney disease such as glomerulonephritis or interstitial nephritis (most of these patients will have microalbumuria or proteinuria, hematuria or low eGFR)

MANAGEMENT OF CHRONIC KIDNEY DISEASE IN PRIMARY CARE
Screening Algorithm



Sidebar A: High Risk Patient

1. Diabetes mellitus
2. Hypertension
3. Cardiovascular disease
4. Family history
5. Frequent urinary tract infection/obstruction
6. Systematic illness affecting the kidney

Definitions of Abnormalities in Albumin Excretion

★ Condition	Random Urine for Alb-to-Cr Ratio (mg/g creatinine)
Normal	< 30
Microalbuminuria	30 - 300
Macroalbuminuria	> 300

Indications for Nephrology Referral for Proteinuria

URINE RESULTS	BLOOD RESULTS			
		eGFR > 60	eGFR 30 - 59	eGFR < 30
	Protein < 1 gram/day without hematuria	Reassess patient annually with eGFR and urine protein determination	Manage according to recommendations for non-diabetic renal disease according to stage of disease. Consider one time referral to a renal specialist.	Refer to Renal Specialist
	Protein 1 - 3 grams/day without hematuria	Consider diabetic nephropathy. If confirmed: - Offer ACE inhibitor (or ARB if intolerant) unless contraindications. - Treat blood pressure (aim for 120 - 129/<80mmHg). - Treat HbA1c to target. - Treat Hyperlipidemia to target. - Continue to monitor eGFR and urine protein excretions at least annually. If diabetic nephropathy is unlikely, consider referral to a renal specialist.		
	Protein >1 gram/day with hematuria	Refer to Renal Specialist		
	Protein >3 grams/day with or without hematuria			

VA/DoD Chronic Kidney Disease Clinical Practice Guideline - 2008
Web Sites: VA: http://www.healthquality.va.gov
DoD: https://www.QMO.amedd.army.mil

Pharmacotherapy

Angiotensin Converting Enzyme Inhibitors (ACEIs)

Benazepril	10 – 40 mg divided once or twice daily	▪ Start with lower or less frequent doses in patients with CKD (except fosinopril as partial compensation by hepatobiliary elimination) or in patients currently being treated with a diuretic. ▪ Use with caution in patients with renal artery stenosis. ▪ Monitor potassium and renal function after initiation. ▪ Concomitant therapy with potassium-sparing diuretics and/or potassium supplements may result in hyperkalemia. ▪ Due to the potential risk for fetal morbidity and mortality in patients taking ACEIs during pregnancy, it is recommended that therapy be discontinued as soon as a woman becomes pregnant; alternate therapy should be considered. ACEIs should only be prescribed in pregnant women when the benefit clearly outweighs the potential risk for fetal abnormalities. ▪ Contraindicated in patients with a history of angioedema on an ACEI
Captopril	25 – 150 mg divided two to three times daily	
Enalapril	5 – 40 mg divided once or twice daily	
Fosinopril	10 – 40 mg once daily	
Lisinopril	10 – 40 mg once daily	
Moexipril	7.5 – 30 mg divided once or twice daily	
Perindopril	4 – 8 mg divided once or twice daily	
Quinapril	10 – 80 mg divided once or twice daily	
Ramipril	2.5 – 20 mg divided once or twice daily	
Trandolapril	1 – 4 mg once daily	

Angiotensin II Receptor Blockers (ARBs)

Candesartan	8 – 32 mg once daily	▪ Alternative to ACEIs in patients unable to tolerate an ACEI. ▪ Consider lower doses in patients with intravascular volume depletion (e.g., patients currently being treated with a diuretic). ▪ Use with caution in patients with renal artery stenosis. ▪ Monitor potassium and renal function after initiation. ▪ Concomitant therapy with potassium-sparing diuretics and/or potassium supplements may result in hyperkalemia. ▪ Contraindicated in 2nd and 3rd trimesters of pregnancy due to potential neonatal/fetal morbidity and death. ▪ Use with caution in patients with a history of angioedema on an ACEI.
Eprosartan	400 – 800 mg divided once or twice daily	
Irbesartan	150 – 300 mg once daily	
Losartan	50 – 100 mg divided once or twice daily	
Olmesartan	20 – 40 mg once daily	
Telmisartan	40 – 80 mg once daily	
Valsartan	80 – 320 mg once daily	

Refer to www.pbm.va.gov or http://vaww.pbm.va.gov for a current list of medications on the One VA National Formulary

a. Adapted from KDOQI Clinical Practice Guidelines on Hypertension and Antihypertensive Agents in Chronic Kidney Disease. Guideline 11: Use of angiotensin-converting enzyme inhibitors and angiotensin receptor blockers in CKD at http://www.kidney.org/professionals/kdoqi/guidelines_bp/guide_11.htm

b. Adapted from McEvoy GK, ed. American Hospital Formulary Service Drug Information, Bethesda, MD: American Society of Health-System Pharmacists, Inc., 2006.

c. Adapted from Hebel SK ed. Drug Facts and Comparisons, St. Louis, Missouri: Facts and Comparisons Inc., May 2006.

d. One hour before meals, on an empty stomach.