Applying clinical guidelines – treating and managing CKD

✓Develop patient treatment plan according to level of severity.

CKD Classification and Staging

- **Green:** Low risk (LR)
- **Yellow:** Moderate risk (MR)
- **Orange:** High risk (HR)
- **Red:** Very high risk (VHR)

Kidney function stage GFR (ml/min/1.73m²) Description and range			Kidney damage stage Urine albumin/creatinine ratio Description and range		
			A1	A2	A3
			Normal to mild increase <30mg/g	Moderate increase 30-300 mg/g	Severe increase >300mg/g
G1	Normal or high	≥90	LR	MR	HR
G2	Mild decrease	60-89	LR	MR	HR
G3a	Mild to moderate decrease	45-59	MR	HR	VHR
G3b	Moderate to severe decrease	30-44	HR	VHR	VHR
G4	Severe decrease	15-29	VHR	VHR	VHR
G5	Kidney failure	<15	VHR	VHR	VHR

Source: 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.

Yellow Treatment Plan Recommendations[1,2]

eGFR ≥ 60 ml/min/1.73m^2 with UACR 30-300 mg/g or eGFR 45-59 ml/min/1.73m^2 with UACR < 30mg/g	
Assessments	At least annual clinical review Assess to rule out treatable kidney conditions Assess/reduce risk for cardiovascular disease (CVD) Assess for acute kidney injury (AKI) Labs UACR Urea, creatinine, electrolytes eGFR HbA1c Fasting lipids
Management	Evaluate/manage comorbid conditions Individualize BP target Avoid nephrotoxic medications Prescribe ACEI or ARB – maximum tolerable doses Target hemoglobin A1c ~ 7.0% Target salt intake to < 2g per day Prescribe lipid lowering medications as appropriate Refer to renal dietitian Teach patient self-management
Patient behavior and lifestyle	Increase physical activity Maintain a healthy weight Avoid tobacco products

Orange Treatment Plan Recommendations[1,2]

eGFR 30-59 ml/min/1.73m^2 with UACR 30-300 mg/g or eGFR 30-44 ml/min/1.73m^2 with UACR < 30mg/g	
Assessments	3-6 month clinical review Assess to rule out treatable kidney conditions Assess/reduce risk for CVD Assess for AKI Assess for complications – AKI, CVD,

	dyslipidemia, infections, anemia due to impaired erythropoiesis and low iron stores, hypertension, mineral imbalance and bone disorder (calcium, phosphorus, vitamin D) Labs UACR Urea, creatinine, electrolytes eGFR HbA1c Fasting lipids CBC Calcium, phosphate, and vitamin D PTH if eGFR <45 mL/min/1.73m2
Management	Reduce progression of CKD Evaluate/manage comorbid conditions Evaluate/manage complications Maintain BP target Avoid nephrotoxic medications Prescribe ACEI or ARB – adjust to levels of kidney function Target hemoglobin A1c ~ 7.0% Target salt intake to < 2g per day Refer to renal dietitian for individualized diet Teach patient self-management Refer to social worker/case manager Refer to nephrology as appropriate*
Patient behavior and lifestyle	Increase physical activity Maintain a healthy weight Avoid tobacco products Eat a kidney-healthy diet as prescribed by a renal dietitian

eGFR < 30 ml/min/1.73m2 irrespective of albuminuria or UACR > 300mg/g irrespective of eGFR	
Assessments	1-3 month clinical review Assess/reduce risk for CVD Assess for complications – AKI, CVD, dyslipidemia, infections, anemia, hypertension,

	mineral imbalance and bone disorder, metabolic acidosis, malnutrition (low serum albumin), fluid and salt retention associated with accelerated hypertension Labs UACR Urea, creatinine, electrolytes eGFR HbA1c Fasting lipids CBC Calcium, phosphate, and vitamin D PTH
Management	Reduce progression to ESRD Treat comorbid conditions Treat complications Maintain target BP Avoid nephrotoxic medications Maintain target hemoglobin A1c ~ 7.0% Refer to renal dietitian Refer to social worker/case manager Educate/prepare for RRT Refer to nephrology at least 12 months prior to renal replacement therapy (RRT) PCP continues to coordinate patient care
Patient behavior and lifestyle	Maintain physical activity as appropriate Maintain a healthy weight Avoid tobacco products Eat a kidney-healthy diet as prescribed by a renal dietitian

✓ Consult, refer, and manage with nephrology when patient presents with:*

UACR Chart

- Green: Low risk (LR)
- Yellow: Moderate risk (MR)
- Orange: High risk (HR)
- Red: Very high risk (VHR)

			UACR		
			Normal	Moderate	Severe
			<30mg/g	30-300 mg/g	>300mg/g
G1	Normal	>90	LR	MR	HR
G2	Mild decrease	60-89	LR	MR	HR
G3a	Mild to moderate decrease	45-59	MR	HR	VHR
G3b	Moderate to severe decrease	30-44	HR	VHR	VHR
G4	Severe decrease	15-29	VHR	VHR	VHR
G5	Kidney failure	<15	VHR	VHR	VHR

eGFR and/or UACR that fall into the red zone.

AKI or abrupt sustained drop in eGFR.

Rapid progression as defined as a sustained declined in eGFR of more than 5 ml/min/1.73m^2/yr.

RBC > 20 per high power field sustained and not readily explained.

Resistant hypertension refractory to treatment with 4 or more antihypertensive agents.

Persistent abnormalities of serum potassium.

Recurrent or extensive nephrolithiasis.

eGFR < 30 ml/min/1.73m^2 in preparation for RRT.

✓Manage patient with progressive CKD in a multidisciplinary care setting to include:

Primary and specialty care, health educator, and social worker/case manager.

Access to dietary counseling.

Education and counseling about different renal replacement therapy (RRT) modalities including transplantation options, hemodialysis, peritoneal dialysis, and options for vascular access surgery.

Conservative management for patients who choose not to receive RRT, to include protocols for pain management and psychological and spiritual care as desired.

Palliative and end-of-life care.

[1] Adapted from CKD Management in General Practice, 2nd edition, Kidney Health Australia, Melbourne, 2012.

[2] Adapted from Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 Clinical Practice Guidelines for the Evaluation and Management of Chronic Kidney Disease. Kidney Inter, Suppl. 2013; 3; 1-150.