October/2019

Department of Health Research
Ministry of Health and Family Welfare, Government of India

INDIAN COUNCIL OF MEDICAL RESEARCH
Serving the nation since 1911

# Standard Treatment Workflow (STW) for the Management of

# CHRONIC KIDNEY DISEASE (CKD)

## ICD-10-N18.3

### WHAT IS CKD?

Abnormalities of kidney structure or function, present for >3 months, with implications for health

### WHEN TO LOOK FOR CKD

- History of long-standing nocturia, or constitutional symptoms
- Edema, hematuria, proteinuria or renal stones
- Long-term intake of painkillers or herbal medicines
- Family history of kidney disease
- Growth retardation, rickets, or proximal myopathy
- Unexplained hypertension or anemia
- Longstanding diabetes, hypertension, CVD, stroke, PVD
- Systemic diseases (e.g. connective tissue disease)

### EVALUATION OF NEWLY DIAGNOSED PATIENT WITH CKD

- Serum creatinine, electrolytes, bicarbonate
- Estimate glomerular filtration rate using CKD-EPI equation
- Urinalysis (examine sediment, proteinuria quantitation)
- Ultrasound of kidneys and urinary tract
- Calcium, phosphate, alkaline phoshatase, albumin
- CBC including peripheral blood film
- Iron profile - Serum iron, TIBC, TSAT
- HBsAg, anti-HCV

### INITIAL ASSESSMENT FOR

- Confirmation of CKD diagnosis (repeat tests after 3 months)
- Staging and progression rate
- Establishing cause of kidney disease
- Identify and treat reversible factors (hypertension, volume loss, obstruction, infection)
- Look for complications (anemia, bone disease, dyselectrolytemias, CVD)

### LIFESTYLE MEASURES FOR ALL CKD PATIENTS:

- Weight control/ weight gain monitoring in children
- Regular physical activity
- Reduce dietary salt intake to < 5 g/day
- Stop tobacco use in all forms
- Stop/moderate alcohol use
- Stop using unproven health supplements
- Do not use NSAIDS
- Avoid untested indigenous medicines

### BP CONTROL ( TARGET <130/80, 120/80 IF PROTEINURIA)

- Restrict dietary salt to < 5 g/day
- Use any anti-HT available in local pharmacy
- Diuretics - eGFR > 45 : thiazide, <45 ml/min: furosemide; <30 ml/min: do not use potassium sparing agents
- ACEI/ARB preferred* for proteinuric patients (> 1 g/d)

*caution/do not use if eGFR <30 ml/min, or Potassium >5.5 mEq/L

### VACCINATION SCHEDULE FOR NEWLY DIAGNOSED CKD PATIENT

- If HBV -ve: 20 µg IM in each deltoid at 0,1,2 and 6 months
- In children - complete primary vaccination schedule

### ANEMIA MANAGEMENT

- Establish iron replete state
- If not iron replete, give oral iron
- Consider IV iron for dialysis patients and those not tolerating orally
- If Hb still <8 g/dl – start erythropoietin, titrate to Hb 10-11 g/dl

### MANAGEMENT OF HYPERPHOSPHATEMIA (PO4>5.5)

- Start with Ca-containing binders
- Non Ca-binders can be used if serum Ca >9 mg/dl, vascular calcification or low iPTH

### DIABETES CONTROL (TARGET HBA1C <7%)

- Do not use metformin if eFGR <30

### NUTRITION

- Salt restriction < 5g/d. Protein 0.6-0.8 g/kg/day.
- DO NOT restrict proteins unless documented high protein user (dairy, white meat are good protein sources, mix different types of dal).
- Restrict green leafy vegetables if eGFR <30 ml/min
- Avoid fruit juices, coconut water and carbonated beverages
- For children: ensure adequate protein intake appropriate for age.

### LOW POTASSIUM FRUITS/ VEGETABLES:

Apple, pineapple, papaya, pear, tangerine, watermelon, grape, plum, cabbage, carrot, cauliflower, onion, radish, peppers, chillies, brinjal, cucumber, green beans, peas, rice, bread

### VITAMIN D THERAPY

- Supplement 60,000 units cholecalciferol q2W
- Correction of acidosis with oral sodium bicarbonate
- Activated vitamin D if hyperparathyroidism

## MANAGEMENT

### PRIMARY CARE

- Detailed history and physical examination
- Identify and correct reversible factors
- Stop nephrotoxic agents
- Referral after stabilization

### INDICATIONS FOR REFERRAL

- Initial evaluation of all newly diagnosed cases
- Rapid disease progression
- New complication
- Discussion for Renal Replacement Therapy (RRT)

### ADMISSION CRITERIA

- Initial evaluation or when patient presents with specific problems – like acute worsening, development of a new complication
- For creation of vascular access
- For PD catheter placement or initiation
- Initiation on HD and for kidney transplant

### DISTRICT HOSPITAL

- Detailed history and physical examination
- Investigate to ascertain cause of CKD
- Tailor treatment to cause
- Identify and manage complications
- Vaccination
- Identify and correct acute factors
- Counseling: nutrition, lifestyle, pregnancy in women of child-bearing age
- Discussion regarding RRT
- Vascular access creation or PD Catheter insertion
- Send patient back to community with treatment plan

### TERTIARY CARE

- Detailed history and physical examination
- Investigate to ascertain cause of CKD (imaging/biopsy/genetic studies)
- Tailor treatment to cause
- Identify and manage complications
- Vaccination
- Counseling: nutrition, lifestyle, pregnancy in women of child-bearing age
- Discussion regarding RRT
- Vascular access creation/PD catheter insertion
- Work-up for transplantation
- Send patient back to community with treatment plan

### PREPARATION FOR RENAL REPLACEMENT THERAPY

- eGFR < 30 : Preserve veins in the non-dominant arm for AV Fistula
- eGFR < 30 : discuss RRT options.
- eGFR < 15 : May need dialysis soon, counsel for AV fistula, list for transplant
- Dialysis start : depends on symptoms or eGFR <5 ml/min
- Look for contraindications to HD or PD : discuss choice in those suitable for either

### CONSERVATIVE CARE

- If life expectancy limited, multiple comorbidities/personal preference
- Decision-making should be shared with patient/family

**KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES**

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (**stw.icmr.org.in**) for more information.