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Standard Treatment Workflow (STW)

CHRONIC KIDNEY DISEASE (CKD)

ICD-11-GB61

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
- Longstanding diabetes, hypertension, Heart Disease, stroke, PVD, Family history of kidney disease, AKI in the past, Prediabetes, HIV, Recurrent UTI in childhood, Developmental anomalies of the Kidney
- Unexplained Anemia, Growth retardation, rickets
- Systemic diseases (eg. connective tissue disease)

EVALUATION OF NEWLY DIAGNOSED PATIENT WITH CKD

- Serum creatinine, electrolytes, bicarbonate
- Estimate glomerular filtration rate using CKD-EPI equation (>18 yrs) or Modified Schwartz equation (<18 yrs)
- Urinalysis/examine sediment, proteinuria quantitation
- Ultrasound of kidneys and urinary tract
- Calcium, phosphate, alkaline phosphatase, albumin
- CBC including peripheral blood film
- Iron profile – Serum iron, TIBC, TSAT

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, dys-electrolytemias, 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 alcohol use
- Stop using unproven health supplements
- Do not use NSAIDS
- Avoid untested indigenous medicines

BP CONTROL (TARGET <120/80)

- Restrict dietary salt to <5 g/day
- Use any anti-HT available in local formulary
- BP <90th percentile & <120/80 in Adolescents >13 yrs

ACE/ARB preferred*

*Caution if 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
- Pneumococcal, Shingles, Annual Influenza Vaccine
- 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 Iron Replete – start ESAs & titrate to keep Hb 10–11 g/dl

MANAGEMENT OF HYPERPHOSPHATEMIA (PO4>5.5)

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

DIABETES CONTROL

- Do not use metformin if eGFR <30
- SGLT2i if eGFR >20 ml/min
- Individualize HbA1c target

NUTRITION

- Salt restriction <5 g/day and protein intake 0.8 g/kg/day.
- Do not restrict protein intake unless there is documented high protein consumption (Dairy and white meat are good protein sources; include a variety of dals)
- Restrict potassium and salt substitutes in case of hyperkalemia.
- Avoid fruit juices, coconut water, and carbonated beverages.
- For children: Ensure adequate protein intake appropriate for age, with dietary recommendations as advised by the nephrologist

LOW POTASSIUM FRUITS/VEGETABLES

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

MINERAL BONE DISEASE

- Measure serum calcium, phosphorus, 25 OH vitamin D, PTH & alkaline phosphatase - if any abnormality, refer to Nephrologist
- Oral sodium bicarbonate if venous bicarbonate <18 mEq/l

MANAGEMENT

PRIMARY CARE

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

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

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

INDICATIONS FOR REFERRAL

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

ACEI/ARB, SGLT2I & Non-Steroidal MRAs retard CKD progression & reduce CV events - should be used when possible, with careful monitoring

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

PREPARATION FOR RENAL REPLACEMENT THERAPY

- eGFR <30: Preserve veins in the non-dominant arm for AV fistula
- eGFR <30: Discuss RRT options
- Counsel for AVF
- Dialysis start: To be decided by Nephrologist based on symptoms and complications of renal failure

CONSERVATIVE CARE

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

ABBREVIATIONS

ACEI: Angiotensin Converting Enzyme Inhibitor
AKI: Acute Kidney Injury
ARB: Angiotensin Receptor Blocker
AV Fistula: Arterio-Venous Fistula
BP: Blood Pressure
Ca: Calcium
eGFR: Estimated Glomerular Filtration Rate
ESA: Erythropoiesis Stimulating Agents
Hb: Haemoglobin
HbA1c: Haemoglobin A1c
HBV: Hepatitis B Virus
HIV: Human Immunodeficiency Virus
iPTH: Intact Parathyroid Hormone
IV: Intravenous
NSAIDs: Non-Steroidal Anti-Inflammatory Drugs
PD: Peritoneal Dialysis
PO4: Phosphate
PVD: Peripheral Vascular Disease
RRT: Renal Replacement Therapy
SGLT2I: Sodium Glucose Transporter 2 inhibitor
TIBC: Total Iron Binding Capacity
TSAT: Transferrin Saturation
UTI: Urinary Tract Infection

REFERENCES

1. Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int. 2024 Apr;105(4S):S117-S314. doi: 10.1016/j.kint.2023.10.018. PMID: 38490803

EARLY RECOGNITION. DECISIVE ACTION. PREVENT COMPLICATIONS