# PRE-DIALYSIS CARE IN CHRONIC KIDNEY DISEASE PATIENTS

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# OUTLINE

- INTRODUCTION
- BURDEN OF CKD
- DEFINITION OF PRE-DIALYSIS CARE (PDC)
- GOALS OF PDC IN CKD
- COMPONENTS OF PDC
- ADVANTAGES OF PDC
- CVS RISK MODIFICATION

# Introduction

- Chronic kidney disease (CKD) is defined as kidney damage or glomerular filtration rate (GFR) <60 ml/min/1.73 m2 for more than 3 months with implications for health.

- The incidence and prevalence of CKD have increased in the recent years in developed and developing nations.

- In Nigeria, the reported prevalence of CKD according to both hospital and community based studies varies between 6-12%

# CKD Staging System

| Stage | Description | eGFR, mL/min/1.73 $m^2$ |
|---|---|---|
| 1 | Kidney damage* with normal or ↑ eGFR | ≥ 90 |
| 2 | Kidney damage* with mild ↓ eGFR | 60-89 |
| 3 | Moderate ↓ eGFR | 30-59 |
| 4 | Severe ↓ eGFR | 15-29 |
| 5 | Kidney failure | < 15 (or dialysis) |

*Evidence of kidney damage defined as pathologic abnormalities or markers of damage, including abnormalities in blood or urine tests or imaging studies.

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# Burden of CKD

According to the 2010 Global Burden of Disease study, CKD ranked amongst the top twenty causes of death.

The devastating effect of the disease on socio-economic lives of the people is more pronounced in developing countries.

This is because of late presentation and due to the fact that the disease predominantly affects the productive group in these countries.

# Burden of CKD

The burden of CKD is huge with the following consequences:

1. Economic loss

2. Increase in morbidity

3. Increase in mortality

# Pre-dialysis Care

- Predialysis care refers to care given to patient with CKD prior to dialysis aimed towards improving quality of life, preservation of existing renal function, preventing morbidity and mortality.

- There is no consensus on the definition of pre-dialysis patients however, for the purpose of this discussion, I adopt patients with GFR of <30mls/min who do not yet have indication for RRT as pre-dialysis patients

# Pre-dialysis Care

- This involves multi-disciplinary and well structured psycho-educational approach.
- It also involves intensive patient education, cognitive based therapy, improved adherence to target-driven lifestyle modification and pharmacotherapy
- This is given by the renal team that is made up of the nephrologists, renal nurse, dietician, vascular surgeon, pharmacist, social worker and clinical psychologist.

# Components of Pre-dialysis Care

- Early detection of patients with CKD by screening for risk factors
- Early referral to nephrologist for specialist care
- Regular education and counseling on CKD
- Psychosocial Support
- Modification of  CVS risk factors
- Vascular Access Creation
- RRT
- Preemptive Transplantation

# Advantages of Adequate Pre-dialysis Care

- Better patient survival and quality of life
- Reduced length of hospital stay
- Reduced health care cost
- Reduced need for urgent dialysis
- Preservation of residual renal function
- Improved vocational outcomes
- Better metabolic parameters at initiation of RRT
- Higher proportion of patients with permanent vascular access
- Better involvement of patient in decision making as regard their management
- Better transplant outcomes

# Consequences of Inadequate Pre-dialysis Care

- Increase hospitalization rate and mortality
- Reduced patients' choice of RRT modalities
- Higher health care cost
- Delayed referral for RRT
- Low prevalence of permanent dialysis access
- Severe metabolic derangement
- Malnutrition and Anaemia
- Cardiovascular Diseases such as heart failure, Ischaemic heart disease

# Targeted Traditional Cardiovascular Risk Factors in Pre-dialysis Care

- Hypertension
- Diabetes Mellitus
- Smoking
- Alcohol
- Obesity
- Dyslipidaemia

# Targeted Non-traditional Cardiovascular Risk Factors in Pre-dialysis Care

- Albuminuria
- Calcium and Phosphate abnormalities
- Anaemia
- Left ventricular hypertrophy
- Hypoalbuminaemia
- Hyperuricaemia
- Inflammation
- Homocysteinaemia

# Lifestyle Modification

- Stop smoking
- Reduce Alcohol
- Weight reduction
- Regular exercise
- Reduce dietary salt intake

# Proteinuria

Aim is to reduce proteinuria to below 500mg in CKD patients with significant proteinuria.

This could be achieved by:

1. Reduction in dietary protein intake

2. Use of antiproteinuric medication such as ACEIs, ARBs

3. Dietary salt restriction

# Hypertension

- Blood pressure target of 130/80 mmHg
- Combination therapy is usually required.
- Preferred Anti-hypertensive medications: ACEIs/ ARBs> Renin Inhibitors> diuretic>ND- CCB> B-Blocker>D-CCB
- Weight reduction in overweight/obese patients
- Dietary salt restriction

# Diabetes mellitus

- Target  Fasting Blood Glucose of 100-120mg/dl, HbA1c of <7%
- Glucose Lowering Agents: Insulin, Pioglitazones, Sulphonylureas such as gliclazide, DPP4i
- Weight loss in those that are overweight or obese

# Dyslipidemia

- Target is to reduce LDL-c to < 2.5 mmol/l
- Reduce saturated fatty acid in diet
- Use of statins such as artovastatin

# Anaemia

- Achieve the following target:

Hb conc of 11-12g/dl, Transferrin saturation of >20% and ferritin of 100-500 microgram/l

- Correct iron deficiency using parenteral iron
- Give haematinics
- Use erythropoietin

# Hyperuricemia

- Aim to keep uric acid below 0.35mmol/l
- Restrict purine and fructose in diet
- RAAS blockade using ARBs
- Use Allopurinol at reduced dose

# Calcium and Phosphate Abnormalities

Therapeutic target:

Serum Phosphate <1.2 mmol/L.

Serum PTH between 7-12 pmmol/L

Serum Calcium < 2.4 mmol/L

These are achieved through

1. Dietary phosphate restriction and phosphate binders such as sevelamer

2. Treat hypocalcaemia using calcitriol and calcium supplements

# Creation of Vascular Access

- Vascular mapping by Doppler Ultrasound
- Venous preservation in non-dominant upper limb
- Timely access creation and maturation before the need to commence RRT

# Psychosocial Support

- These patients are assessed for psychopathologies such as anxiety, depression, sleep disorders and given appropriated supportive therapy
- The social worker also assesses them for psychosocial support
- The family members are also involved in psychosocial support

# Psychosocial Outcomes

- Improved perceived quality of life
- Improved  functional status
- Improved patient's self care
- Rehabilitation

# EDUCATION

This is an integral part of pre-dialysis care. All members of the renal team are involved in this aspect of the care

This involves;

1. Counseling
2. Structured education
3. Thematic group sessions with other patients including those already on RRT
4. Family socio-education

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