

eGFR, Timing of Referral and Multidisciplinary Care

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Educational Half Day

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Declarations

- Consults: none
- Speaker bureau/honorarium: Lilly, Boehringer-Ingelheim, Janssen, Shire, Ortho-Biotech Canada, Bristol Myers Squibb, Amgen
- Grants/Research: none
- Other: none

Objectives

- Review eGFR and its interpretation
- Timing of referral
- Goal of Early referral
- Goal of Multidisciplinary CKD care

Case 1 - Proteinuria

- 25 yo male
 - DM 1 x 15 years, retinopathy, malb/Cr 90
 - BP 140/90, LDL 4, Cr 60, eGFR 110
- Do we need more information?
- Is this a high risk patient?
- Does he need to see nephrology?

Case 2 – Hematuria and Proteinuria

- 65 yo female
 - Microscopic hematuria 3-5rbc per hpf
 - 1g/L dipstick proteinuria
 - Aches/pains, mild rash
 - Cr 60, eGFR 80, BP 160/100
- Do we need more information?
- Is this a high risk patient?
- Does she need to see nephrology

eGFR – The meaning

- What is GFR?
 - A true sum total of glomerular filtration
- What is eGFR?
 - An estimate of GFR
 - Uses proteins (Creatinine, cystatin-C) and equations to estimate GFR
 - Uses DTPA and other exogenous markers

eGFR – How to estimate

- Radioisotope
 - Inulin – Gold standard (not used)
 - DTPA and Iodothalamate
- Creatinine
 - MDRD (Cr, age, gender, race)
 - Valid in $GFR < 60 \text{ml/min}$
 - CKD-EPI (Cr, age, gender, race)
 - Valid in both $<$ and $> 60 \text{ml/min}$

eGFR – The problems

- Normalized to body surface area
 - Generally use 1.73m^2
- Age
 - GFR declines with age (normal process)
 - Loss of 0.4-1.2 mL/min/year after age of 50

eGFR – The problems

- Acute Kidney Injury
 - Changes in eGFR estimates do not reflect true GFR
 - Only way to estimate is radionucleotide scan or urine Cr excretion rates
- Very lean or obese individuals
 - Tend to overestimate true GFR

eGFR – Problems with Cr

- Tubular secretion
 - As GFR declines contribution greater
 - Better to use average of Urea and Cr clearances as an estimate of GFR

Goal of Early Referral

- Patient Education
- Modality Decisions
- Creation and maturation of vascular access
- Delay progression to ESRD
- Cardiovascular disease management

Consequences of Late Referral

- Increased morbidity and mortality
- Anemia
- Hyperparathyroidism
- Cardiovascular Disease
- Increased risk of hospitalization
- Increased health-care costs
- Suboptimal vascular access
- Less informed choice of dialysis modality

Benefits of Early Referral

- Improved biochemical abnormalities
- Fewer hospitalized days
- Increased choice of home modalities
- Increased survival
- Delay onset of ESRD
- Less use of permanent access

Timing of Referral

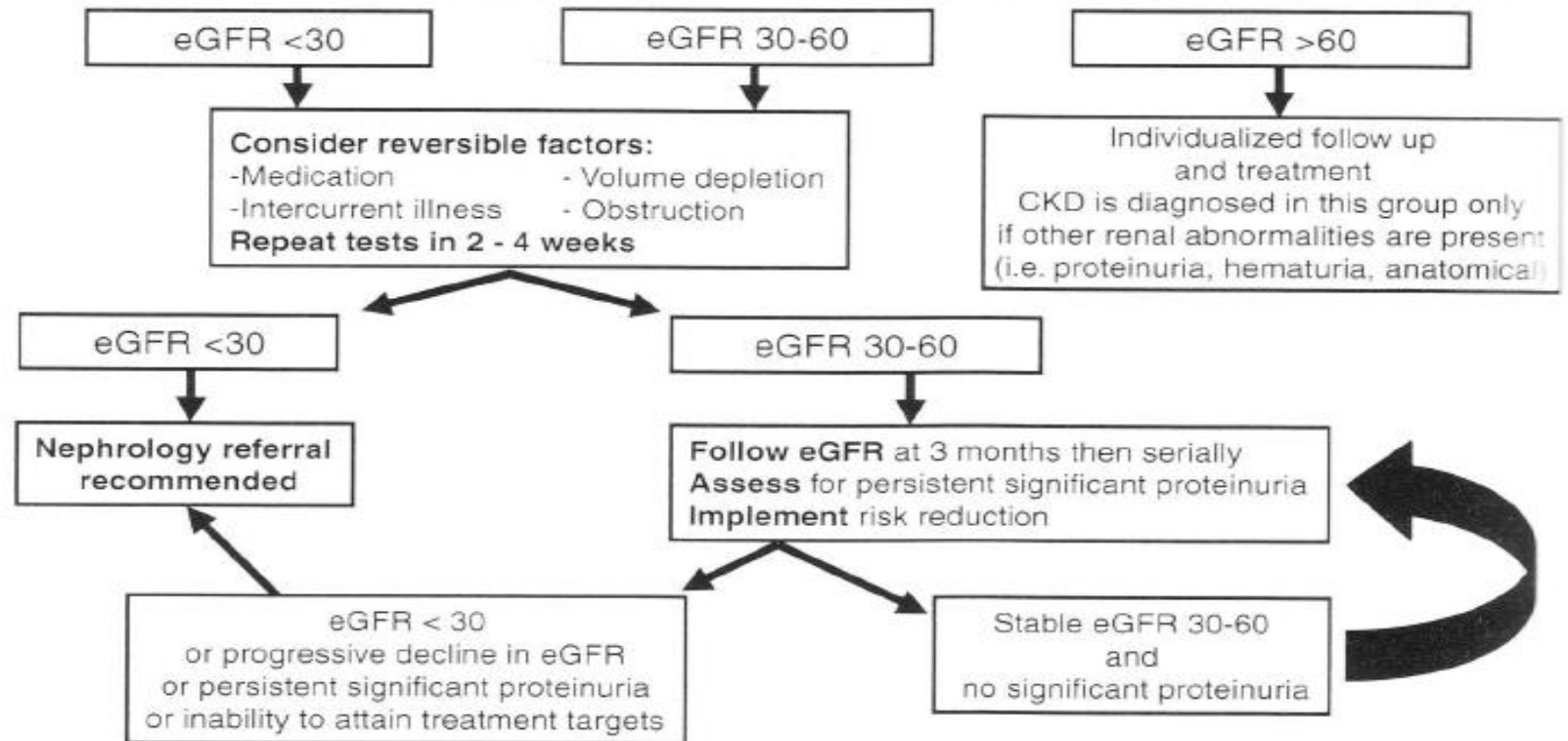
- Literature suggests:
 - Late is <1 month before ESRD
 - Early is >4 months before ESRD
- Revised definition should be:
 - Refer at least 10 months before ESRD required (preparation time)

When to Refer



Identify patients in your practice at high risk for Chronic Kidney Disease

- Patients with hypertension
- Patients with diabetes mellitus
- Patients with atherosclerotic coronary, cerebral or peripheral vascular disease
- Patients with heart failure
- Patients with unexplained anemia
- Patients with a family history of end stage renal disease
- First nations peoples



Adapted from: Handbook of Chronic Kidney Disease Management, Daugirdas JT Chapter 39, The unfulfilled promise of pre-dialysis care in Canada. Lebnor A, Benaroya M, Mendelsohn D. 2011

When to Refer

- Identify high risk patients
 - Hypertension
 - DM
 - CAD
 - Anemia
 - PVD

When to Refer

- Determine eGFR
 - Stratify according to eGFR
 - <30ml/min
 - 30-60ml/min
 - >60ml/min
 - Look for reversibility in those <60ml/min
 - Volume depletion, medications
 - Do follow-up tests in 2-4 weeks

When to Refer

- Refer when GFR $<30\text{ml}/\text{min}$
 - In those where no reversible causes found
- Refer if persistent proteinuria (with risk reduction strategies) and GFR $30\text{-}60\text{ml}/\text{min}$
- Refer $>60\text{ml}/\text{min}$ if proteinuria, hematuria or other unexplained anomalies
- Rapidly progressive disease irrespective of cause

Multidisciplinary Renal Clinic

- Patient-centered care
 - Education
- Goal to delay progression of disease
 - Target CVS disease and lifestyle changes
- Prepare patient for renal replacement
- Specialized consultation
 - Physicians, pharmacists, social workers, dieticians, nurse educators, vascular access, transplant

Benefits of Multidisciplinary Clinics

- Decreased urgent/crash dialysis starts
 - Optimal starts
- Home dialysis as modality
- Optimal vascular access
- Improved
 - blood pressure control, anemia and mineral metabolism
- Fewer hospitalizations, decreased mortality

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Questions?

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