eGFR, Timing of Referral and Multidisciplinary Care

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Objectives

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

- **Creatinine**
  - MDRD (Cr, age, gender, race)
    - Valid in GFR<60ml/min
  - CKD-EPI (Cr, age, gender, race)
    - Valid in both < and > 60ml/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 radinucleotide 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
- First nations peoples

- Patients with heart failure
- Patients with unexplained anemia
- Patients with a family history of end stage renal disease

eGFR <30

Consider reversible factors:
- Medication
- Volume depletion
- Intercurrent illness
- Obstruction

Repeat tests in 2 - 4 weeks

eGFR 30-60

Follow eGFR at 3 months then serially
Assess for persistent significant proteinuria
Implement risk reduction

eGFR >60

Individualized follow up and treatment
CKD is diagnosed in this group only if other renal abnormalities are present (i.e. proteinuria, hematuria, anatomical)

Nephrology referral recommended

eGFR < 30
or progressive decline in eGFR
or persistent significant proteinuria
or inability to attain treatment targets

Stable eGFR 30-60
and no significant proteinuria

Adapted from: Handbook of Chronic Kidney Disease Management, Daugirdas JT Chapter 39, The unfulfilled promise of pre-diaylsis care in Canada. Lebner A, Benaroia M, Mendelssohn 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 <30ml/min
  - In those where no reversible causes found
- Refer if persistent proteinuria (with risk reduction strategies) and GFR 30-60ml/min
- Refer >60ml/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
Questions?

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