Chronic Kidney Disease and End-Stage Renal Disease: PBL

Edward Shahady, MD, ABCL, FAAFP

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Edward Shahady, MD, ABCL, FAAFP

Medical Director, Diabetes Master Clinician Program; Clinical Professor, University of Miami, Florida; Clinical Professor, University of Florida, Gainesville.

Dr. Shahady is a graduate of the West Virginia University School of Medicine in Morgantown and board certified in Clinical Lipidology. As medical director of the Diabetes Master Clinician Program, he visits physicians' offices and teaches them how to use an Internet-based diabetes registry and conduct group visits. The program enables population-based achievement of quality goals for diabetes, lipids, and blood pressure. More than 500 physicians and 1,000 office staff use the program in seven other states. Dr. Shahady has contributed more than 100 scientific articles and five books to the medical literature in the areas of diabetes, lipidology, the metabolic syndrome, group medical visits, sports medicine, musculoskeletal medicine, behavioral science, family medicine, and the contribution of family medicine to effective health systems. He serves on the editorial boards of Consultant, Consultant for Pediatricians, and the Journal of Clinical Lipidology. He created and manages three websites to help teach primary care physicians and their office staff, Diabetes Master Clinician Program, Diabetes University, and Family Medicine Teams.

Learning Objectives

1. Practice applying new knowledge and skills gained from Chronic Kidney Disease and End-Stage Renal Disease (CKD/ERD) sessions, through collaborative learning with peers and expert faculty.

2. Identify strategies that foster optimal management of patients with CKD/ERD, within the context of professional practice.

3. Formulate an action plan to implement practice changes, aimed at improving patient outcomes.

Associated Session

- Chronic Kidney Disease and End-Stage Renal Disease: Screening, Monitoring and Appropriate Treatment By the Family Physician
Case History

- Jack a 52-year-white man is scheduled to see you for chronic back pain.
- Further chart review reveals he has type 2 diabetes and takes metformin 2000 mg a day.
- BMI 32, and blood pressure is 145/87
- He takes no other prescribed medications. Family History of Father with Diabetes and MI at age 55

Question

- Laboratory results reveal a serum creatinine level of 1.9 mg/dL.
- What is the eGFR?

Question

- What other lab tests would you obtain?
Results of Lab tests

- ACR—Albumin to creatinine ratio spot urine is 45
- Total Cholesterol 220 LDL 150 Triglycerides 150 HDL 40
- HbA1C=8.6

Treatment Discussion

- What medications might he be taking that are decreasing his GFR

Treatment Discussion

- How would you treat his Hyperglycemia? Would you change the dose of Metformin

Use of diabetes drugs in CKD

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Dose Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiazolidinediones</td>
<td>No dose adjustment—caution with edema</td>
</tr>
<tr>
<td>(pio, rosiglitazone)</td>
<td></td>
</tr>
<tr>
<td>DPP4 Inhibitors</td>
<td>Reduce dosage for alogliptin, saxagliptin, and sitagliptin if GFR ≤50 Linagliptin no dose adjustment</td>
</tr>
<tr>
<td>GLP 1 RA</td>
<td>Exenatide BID and weekly GFR 30-50 use with caution, Albiglutide, Liraglutide, Dulaglutide no dose adjustment</td>
</tr>
<tr>
<td>SGLT1 Inhibitors</td>
<td>Canagliflozin GFR 45-59 lower dose—Dapagliflozin avoid GFR ≤50—Empagliflozin avoid use GFR &lt;45</td>
</tr>
<tr>
<td>Metformin</td>
<td>GFR &lt; 45 lower dose &lt;30 stop</td>
</tr>
<tr>
<td>Insulin</td>
<td>Lower dose with progressive decrease in GFR</td>
</tr>
</tbody>
</table>


Treatment Discussion

- How would you treat his hypertension?
- Any cautions to use with your treatment of his hypertension?

Treatment Discussion

- How would you treat the lipids?
- Any concerns of safety with treatment?
Cautions with other Medications

- **ACE and ARB**
  - GFR <45 lower dose
  - GFR <30 ↓ dose 50%
  - Access GFR and Potassium 1 week after dose ↑
  - Suspend use before and after radiocontrast, colonoscopy, procedures, sepsis illness when GFR <60

- **Statins**—use lower dose—myopathy GFR <60
- **Proton Pump Inhibitors-like** Nexium, Protonix and Aciphex limit use and watch BUN and Creatinine

Risk for CVD, Morbidity and Progression to ESRD by GFR and Albuminuria

<table>
<thead>
<tr>
<th>Albumin to Creatinine Ratio Stages mg/g</th>
<th>CKD Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10-29</td>
<td>1</td>
</tr>
<tr>
<td>10-29-100</td>
<td>2</td>
</tr>
<tr>
<td>10-29-200</td>
<td>3 A</td>
</tr>
<tr>
<td>20-30-45</td>
<td>3 B</td>
</tr>
<tr>
<td>20-30-50</td>
<td>4</td>
</tr>
<tr>
<td>&gt;50</td>
<td>5</td>
</tr>
</tbody>
</table>

Colors represent risk of progression, mortality and morbidity:
- **Green** Low Risk
- **Yellow** Moderate Risk
- **Pink** High Risk
- **Red** Very High Risk

Questions

- Patient needs MRI with contrast—what precautions do you advise?
- Will have surgery—what are the precautions?

Tasks to Work on at Home

- Choose 10 patients with Diabetes and 10 with Hypertension and follow them for one year
- Calculate GFR from smart phone or computer by CKD-EPI formula on all 20 patients
- Decrease progression of CKD by keeping LDL <100, B/P < 140/90 and HbA1c <7
- Appropriately Adjust Medications in patients with CKD

Contact Information

Edward Shahady MD
eshahady@att.net

Web Sites
- [www.diabetesmasterclinician.org](http://www.diabetesmasterclinician.org)
- [www.diabetesuniversitydmcp.com](http://www.diabetesuniversitydmcp.com)
- [www.familymedicineteams.org](http://www.familymedicineteams.org)