

CMEO BriefCase

Identifying Patients at Risk of CKD in Pharmacy Settings

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Learning Objective

Recognize when a patient should undergo guideline-recommended screening with UACR and eGFR for early diagnosis of CKD in patients with T2DM.

Patient Case 1:

Mr. Shah Flagged for MTM Services

Retail pharmacy profile:

MS: 61 YO Asian male

- **Conditions:** T2DM, Hypertension, Depression
- **Medications:**
 - Lisinopril: 40 mg daily (8 days late refilling)
 - Citalopram: 20 mg daily
 - Metformin: 1000 mg twice daily
 - Semaglutide: 7 mg daily

Pharmacist noted on MTM call with patient 8 months ago:

- BP: 130-140/80-90 mmHg
- BMI: 39 kg/m²
- Fasting Blood Glucose: 98 mg/dL



BMI = Body mass index. BP = Blood Pressure. Mg/dL – milligrams per decilitre. mmHG = millimeters of mercury. MTM = Medication therapy management. T2DM = Type 2 Diabetes Mellitus. YO = Year old.

Patient Case 1, Continued



Retail pharmacist: *“Hi, Mr. Shah. I want to reach out today to check on your medications. I see that the lisinopril that you take for your blood pressure is overdue for refill. Are you still taking this medicine?”*

Mr. Shah: *“I am still taking it, but when visited the doc last month, she said my levels were like ‘a healthy 20-year-old!’ I thought that I needed it a few times a week now that my blood pressure is back in the healthy range.”*

Retail pharmacist: *“Glad to hear that your blood pressure is in normal range. That means the lisinopril is working. Do you have a few minutes so we can discuss more?”*

Mr. Shah: *“Sure...”*

Audience Response



In addition to reinforcing the importance of taking his lisinopril daily for BP and CV benefit, what about Mr. Shah is the most compelling factor that indicates he is at risk of developing CKD?

- A. He is 8 days late refilling his lisinopril
- B. His ethnicity is Asian
- C. He has T2DM
- D. His dose of metformin is high
- E. I don't know

T2DM and Risk of CKD



- Of patients with T2DM, 40% go on to develop CKD¹
- Only 10% of patients know they have CKD²
- CKD typically develops 10 years after onset of the disease³

Patient Case 2: Ms. Johnson at Hospital Discharge

MJ: 65 YO woman admitted for COVID

TOC pharmacist notes:

Conditions:

- T2DM x 18 years, admitted for COVID-19

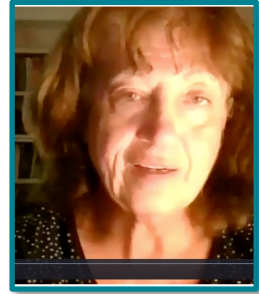
Home Medications:

- Losartan 50 mg daily
- Insulin glargine 40 units daily
- Insulin aspart 10 units 3 times daily before meals
- Metformin 1000 mg twice daily
- Multivitamin daily



TOC = Transitions of care.

Patient Case 2: Ms. Johnson at Hospital Discharge



Out of Range Labs:

- A1C = 7.4%
- BMI = 36 kg/m²
- eGFR = 58 mL/min/1.73 m²
- Albumin/creatinine ratio from 1 year ago:
 - 37 mg/g (no recent ACR)

A1C = Glycated hemoglobin. ACR = albumin-to-creatinine ratio. eGFR = eGFR = estimated glomerular filtration rate.

Audience Response



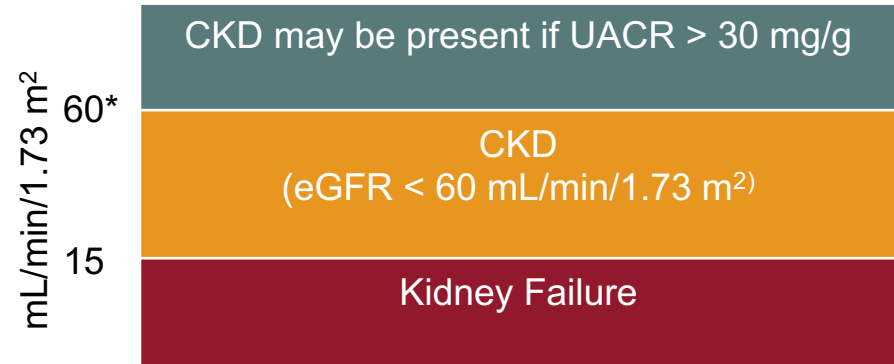
What guideline recommended screening should the TOC pharmacist recommend for Ms. Johnson to receive prior to her post-discharge, outpatient follow up telehealth call?

- A. A repeat COVID test
- B. Urine albumin-to-creatinine ratio test
- C. A1C
- D. I don't know

Guideline-Recommended Screening

- Annual screening for urinary albumin *and* eGFR
 - Confirmation of albuminuria or low eGFR requires 2 abnormal measurements \geq 3 months apart
 - Calculate eGFR from stable serum creatinine levels
- Screen ALL patients with T2DM

Interpreting eGFR Results

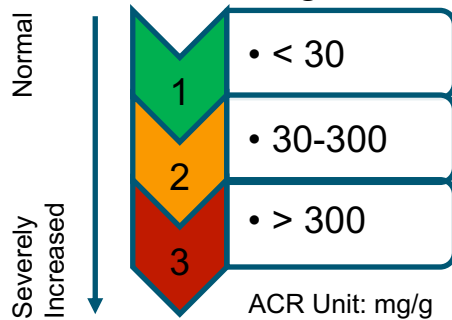


*NKDEP recommends reporting values greater than or equal to 60 as “ \geq 60,” rather than numeric values. Exact values above 60 are not reliable

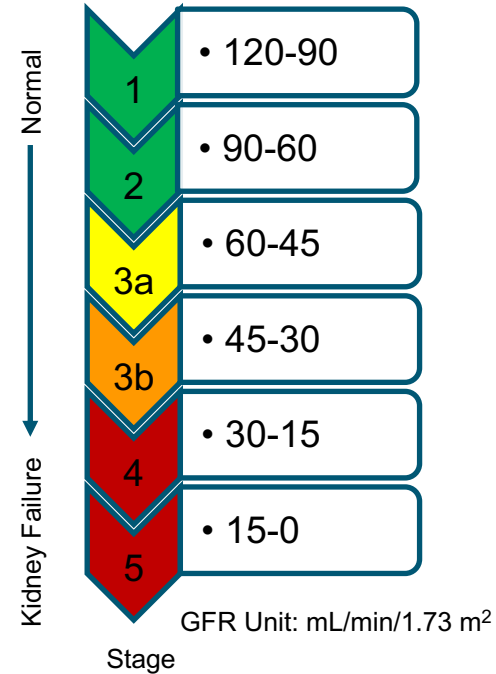
Testing Approaches: UACR and eGFR



Albuminuria Categories in CKD¹

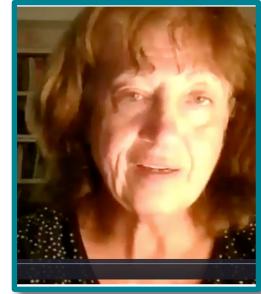


GFR Categories in CKD¹



CKD = Chronic Kidney Disease. ACR = Albumin Creatinine Ratio. GFR = Glomerular Filtration Rate.
1. Adapted from Ciernik M. *Kidney Int Suppl.* 2013;3:1-150.

Patient Case 2: Ms. Johnson Follow-up



- Ms. Johnson made an appointment for a spot urine ACR test.
- Ambulatory health clinic scheduled a follow-up telehealth consultation post hospital discharge.
- New UACR and labs recorded in Ms. Johnson's EHR during her hospital stay.

Patient Case 2:

Ms. Johnson's Post-Discharge Telehealth Call



Patient Case 2: Ms. Johnson's Labs



ALT = Alanine aminotransferase. AST = Aspartate Aminotransferase. BUN = Blood urea nitrogen. CO2 = Carbon dioxide. Mmol/L = Millimoles per liter. U/L = Units per liter.

Lab	Ref Range & Units	Results
Protein, Total	6.6-8.7 g/dL	7.4
Albumin	4.0-4.9 g/dL	4.0
Calcium	8.5-10.2 mg/dL	9.2
Bilirubin, Total	0.2-1.3 mg/dL	0.4
Alkaline Phosphate	34-123 U/L	95
AST	0-32 U/L	16
Glucose	74-99 mg/dL	138
BUN	7-21 mg/dL	15
Creatinine	0.58-0.96 mg/dL	0.72
Sodium	136-144 mmol/L	142
Potassium	3.7-5.1 mmol/L	4.0
Chloride	97-105 mmol/L	103
CO2	22-30 mmol/L	25
Anion Gap	0-15 mmol/L	14
ALT	0-33 U/L	13
eGFR	> 60 mL/min/1.73 m ²	58
UACR	< 30 mg/g	275

SGLT-2i Incidence of Mycotic Infection in Patients with T2DM

SGLT-2 inhibitor	Study	Total Study Population (N)	Incidence of genital infection
Dapagliflozin	Yabe, et al.	16,664	2.46%-4.99%
	Johnsson, et al.	4545	4.1% (2.5 mg), 5.7% (5 mg), 4.8% (10 mg)
	Bailey, et al.	546	8% (2.5 mg), 13% (5 mg), 9% (10 mg)
	Wan Seman, et al.	110	5.3% (10 mg)
	Kaku, et al.	279	0% (1 mg), 1.7% (2.5 mg), 1.7% (5 mg), 0% (10 mg)
Canagliflozin	Prasanna Kumar, et al.	9439	3.4% (100 mg), 4.5% (300 mg)
	Bode, et al.	714	14.5% (100 mg), 14.45% (300 mg)
Empagliflozin	Zinman, et al.	6563	6.5% (10 mg), 6.3% (25 mg)
	Kim, et al.	2477	4.2% (10 mg), 3.6% (25 mg)

SGLT-2i = Sodium-glucose cotransporter-2 inhibitor.
Adapted from Unnikrishnan AG. et al. *Indian J Endocrinol Metab.* 2018;22:837-842.

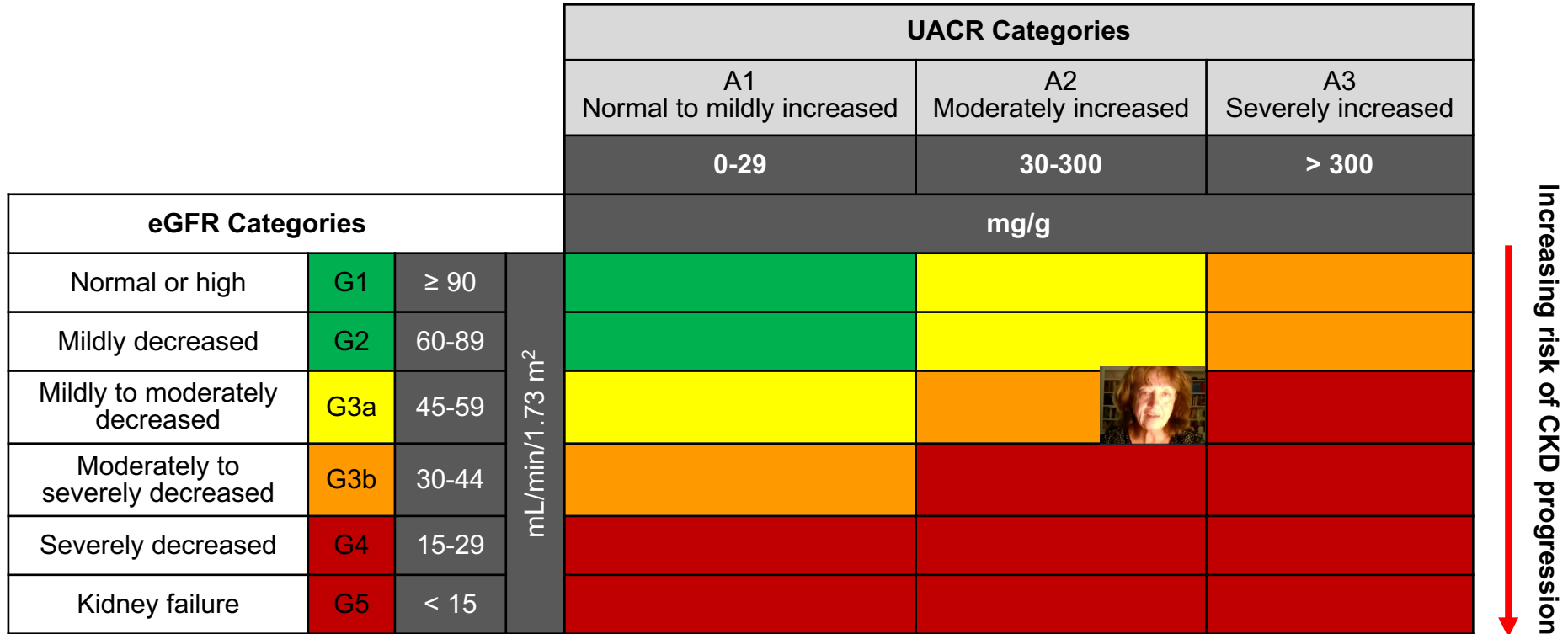
Audience Response



Which of the following is accurate when using eGFR and UACR to assess patients at risk for CKD?

- A. UACR and eGFR have an inverse relationship
- B. eGFR is a better predictor of kidney damage than UACR
- C. Urine creatinine is needed to calculate eGFR
- D. UACR and eGFR help determine CKD stage
- E. I don't know

CKD Progression Heatmap



Audience Response



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SMART Goals

Specific, Measurable, Attainable, Relevant, Timely

- When evaluating patients with T2DM, early detection of CKD should be on the radar alongside CV risk assessment
- Recommend, at a minimum, annual screening of UACR and eGFR to all patients with T2DM to detect CKD.
- Consider early initiation of a multi-modal and individualized drug therapy approach for patients with T2DM and CKD to delay progression of kidney disease with options that include an ACEi or ARB, an SGLT-2 inhibitor or GLP-1 RA, and finerenone

CMEO  **BriefCase** **1**

Identifying Patients at Risk
of CKD in Pharmacy
Settings

CMEO  **BriefCase** **2**

Co-Management
Strategies in CKD: The
Role of the pharmacist in
Counseling Patients

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