



Optimizing Vaccination in CKD: A Case-Based Approach

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CASE VIGNETTE

Sourabh, a 31-year-old male farmer, presents with a history of Stage 5D Chronic Kidney Disease (CKD) secondary to suspected chronic glomerulonephritis (CGN) and diabetic kidney disease (DKD). He is on maintenance hemodialysis (MHD) through a left AV fistula. His medical history includes systemic hypertension (diagnosed 1.5 years ago), poorly controlled diabetes mellitus with HbA1c of 14.1%, diabetic retinopathy (moderate NPDR), and anemia related to CKD and chronic disease. The patient was recently hospitalized for diabetic ketoacidosis (DKA) precipitated by community-acquired Pneumonia. During the hospital stay, he was treated with appropriate antibiotics, optimized blood sugars, and underwent two sessions of dialysis.

On follow-up, the patient reports significant improvement. He continues to receive twice-weekly dialysis. Considering his medical condition, he is at increased risk of recurrent infection due to impaired immunity from CKD, diabetes, and regular dialysis. His immunization history was reviewed and he received the Tdap vaccine in childhood.

Q. Choose the most appropriate vaccination regimen for this patient, according to CDC 2024 guidelines.

A. Pneumococcal vaccine, Hepatitis B vaccine, Influenza vaccine, Tetanus-diphtheria-pertussis (Tdap) vaccine, MMR, Varicella, COVID-19.

B. Pneumococcal vaccine, Hepatitis B vaccine, Influenza vaccine, Hepatitis A, Tetanus-diphtheria-pertussis (Tdap) vaccine, MMR, Varicella, COVID-19.

C. Pneumococcal vaccine, Influenza vaccine, Tetanus-diphtheria-pertussis (Tdap) vaccine, MMR, Varicella, COVID-19.

D. Pneumococcal vaccine, Influenza vaccine, Tetanus-diphtheria-pertussis (Tdap) vaccine, MMR, Varicella, COVID-19. Haemophilus Influenza B, Meningococcal vaccine.

ANSWER: **A.** Pneumococcal vaccine, Hepatitis B vaccine, Influenza vaccine, Tetanus-diphtheria-pertussis (Tdap) vaccine, MMR, Varicella, COVID-19.

COMMENTS

Patients with Stage 5D CKD (on maintenance hemodialysis) are at significantly higher risk for infections due to immune dysregulation, dialysis-related exposures, and comorbidities such as diabetes mellitus. Vaccination is a critical component of their preventive care. The most appropriate vaccination regimen for this patient, based on CDC 2024 guidelines for CKD patients are the Pneumococcal vaccine, Hepatitis B vaccine, Influenza vaccine, Tetanus-diphtheria-pertussis (Tdap) vaccine, MMR, Varicella, COVID-19 vaccines.

Option B: This includes the Hepatitis A vaccine, which is not specifically indicated for CKD patients unless they have chronic liver disease or are at high risk for Hepatitis A exposure (e.g., travelers, MSM, illicit drug use) which are absent in our patient. This option is appropriate for individuals with cirrhosis or alcohol-related liver disease, which is not the primary concern in this case.

Option C: This regimen omits the Hepatitis B vaccine, which is essential for patients on hemodialysis due to their increased risk of HBV transmission. It may be suitable for individuals with heart failure or chronic lung disease, where Hepatitis B vaccination is not universally recommended unless other risk factors are present.

Option D: This adds *Haemophilus influenzae* type B (Hib) and Meningococcal vaccines, which are generally not indicated for CKD. These are recommended for individuals with functional or anatomic asplenia (e.g., sickle cell disease, splenectomy) or hemoglobinopathies to prevent severe bacterial infections.

REFERENCE

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