

# Herpes zoster vaccination in patients with advanced chronic kidney disease and on dialysis: a clinical imperative

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## Abstract

**Introduction:** Herpes zoster (HZ), also known as shingles, is caused by the reactivation of the varicella-zoster virus (VZV) and presents a higher risk of complications in patients with advanced chronic kidney disease (CKD) and those undergoing dialysis.

**Discussion:** CKD patients are particularly vulnerable due to uremia-induced immunodeficiency and additional factors such as diabetes, malnutrition, and the use of immunosuppressive drugs. The cell-mediated immune response, which is essential for controlling VZV, is compromised in these individuals. Although they respond less effectively to traditional vaccines, recombinant adjuvanted vaccines have revolutionized HZ prevention, offering protection even in immunocompromised settings. Observational studies have shown a higher incidence of HZ and more severe complications in patients with advanced CKD and on dialysis, with the risk of postherpetic neuralgia nearly doubled compared to healthy individuals. The recombinant adjuvanted vaccine has demonstrated a good tolerability profile and an efficacy greater than 90%, recommended by KDIGO and CDC/ACIP guidelines for immunocompromised patients.

**Conclusion:** Vaccination should be an integral part of the preventive strategy in nephropathic patients, on par with those against influenza, hepatitis B, and pneumococcus, to reduce the burden of disease and improve clinical outcomes.

**Keywords:** Chronic kidney disease, Dialysis, Herpes zoster

## Introduction

Herpes zoster (HZ), or shingles, arises from the reactivation of latent varicella-zoster virus (VZV) within sensory ganglia after primary infection. With advancing age and comorbidities, the risk of complications, such as postherpetic neuralgia, bacterial superinfection, and visceral dissemination, increases markedly (1,2).

Patients with advanced chronic kidney disease (CKD) and those on dialysis represent a particularly vulnerable population due to uremia-associated immune dysfunction and additional risk factors, including diabetes mellitus, malnutrition, and immunosuppressive therapy (3,4).

## Immunological Background

Cell-mediated immunity is the cornerstone of viral control and latency suppression. In CKD and dialysis patients, both cellular and antigen-presenting immune responses are significantly impaired (3). Consequently, their response to traditional vaccines is often suboptimal.

The introduction of recombinant adjuvanted vaccines, specifically the AS01B-adjuvanted glycoprotein E vaccine, has revolutionized HZ prevention, achieving strong humoral and cellular responses even among immunocompromised individuals (5,6).

## Epidemiology in Nephropathic Populations

Epidemiological studies consistently show an increased incidence and severity of HZ among patients with advanced CKD and those undergoing dialysis. A large cohort analysis demonstrated an HZ incidence 2-3 times higher in dialysis patients than in the general population, with a corresponding rise in hospitalization and mortality rates (7). The risk of postherpetic neuralgia is approximately doubled compared to immunocompetent individuals (8).

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## Available Vaccine Formulation

A Recombinant Adjuvanted Vaccine: Contains VZV glycoprotein E with the AS01B adjuvant; induces robust humoral and cellular responses; efficacy >90%; durable protection ≥10 years. Recommended for adults ≥18 years with immunocompromising conditions, including CKD and dialysis patients (9,10).

## Safety and Efficacy in CKD and Dialysis Patients

Clinical data indicate that the recombinant adjuvanted vaccine demonstrates a favorable safety profile and good tolerability in CKD and dialysis populations. Adverse reactions are generally mild and transient, consisting of local pain, fatigue, and myalgia. Immunogenicity studies in dialysis cohorts have shown protective antibody titers comparable to those in other immunocompromised groups (6,11).

## Guideline Recommendations

- The KDIGO 2023 Clinical Practice Guideline and CDC/ACIP 2022 Adult Immunization Schedule recommend recombinant HZ vaccination in immunocompromised adults, including those with advanced CKD or on dialysis (9,10).
- European (ECDC) and Italian national guidelines have similarly endorsed HZ vaccination for high-risk groups, explicitly including nephropathic patients (12).

## Practical Considerations

- Vaccination should ideally be administered during CKD stage 4-5, prior to dialysis initiation, to optimize immune responsiveness.
- In patients on maintenance dialysis, vaccination may be performed at any time, preferably between dialysis sessions.
- The vaccination schedule consists of two intramuscular doses, administered 2–6 months apart.

## Conclusions

Patients with advanced CKD and those receiving dialysis face an elevated risk of HZ and its complications, which substantially affect both quality of life and prognosis. The recombinant adjuvanted vaccine represents a major advance in preventive care, providing safe and effective protection even in this fragile population.

HZ vaccination should be considered an integral component of the preventive strategy in nephropathic patients, alongside vaccination against influenza, hepatitis B, and pneumococcus, to reduce disease burden and improve clinical outcomes.

## Disclosures

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