

Early Impact of Pneumococcal Vaccination on Hospitalisation and Clinical Outcomes Among Hemodialysis Patients: Experience from NKF

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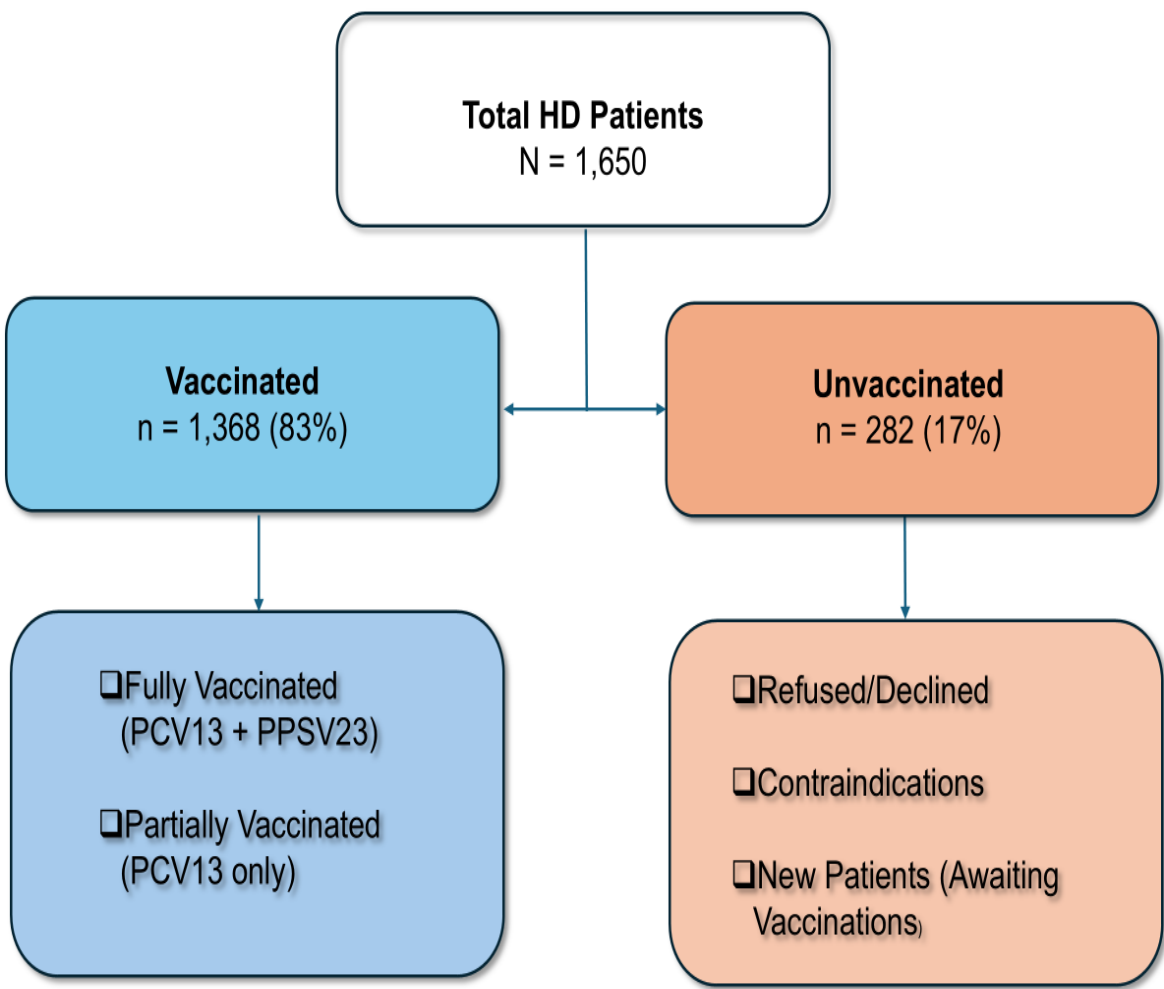
ABSTRACT

Introduction

Hemodialysis (HD) patients face heightened risk of infection due to immunocompromised state and frequent healthcare exposure. Pneumonia remains a major cause of hospitalisation and mortality in this patient group. In response, the National Kidney Foundation (NKF) Malaysia initiated a free pneumococcal vaccination programme from January to May 2024, offering PCV13 followed by PPSV23 after 8 weeks, in line with KDIGO recommendations. This clinical audit study evaluates early outcomes following pneumococcal vaccination across 29 NKF dialysis centres.

METHODS

Figure 1. Study cohort selection and vaccination schedule (PCV13 → PPSV23)



Study Design: Retrospective cohort study.
Comparison: Pre-vaccination (January–December 2023) versus post-vaccination (November 2024–April 2025).
Data Collected: Demographics, causative organisms, need for ventilation, hospital stay duration, mortality, and vaccination status.
Study Population: 1,368 patients across 29 NKF centres (83% voluntary vaccination rate).

RESULTS

Table 1. Demographics of Pneumonia Cases

| Characteristic | Pre-Vaccination (n=55) |
|--------------------------------|------------------------|
| Mean Age (years) | 62.8 |
| Male (%) | 29 (52.7%) |
| Female (%) | 26 (47.3%) |
| Mean Dialysis Duration (years) | 6.11 |

Table 2. Clinical outcomes

| Outcome | Pre-Vaccination (n=55) | Post-Vaccination (n=53) | P value |
|-------------------------------------------|------------------------|-------------------------|----------|
| <i>Streptococcus pneumoniae</i> infection | 9 (16.4%) | 0% | P=0.001 |
| Required ventilation | 14 (25.4%) | 0% | P=0.002 |
| Mortality | 11 (20%) | 11 (21%)* | P > 0.05 |
| Median hospital stay (days) | 10 | 8 | P < 0.05 |

*5 of 11 deaths occurred in partially vaccinated patients.

Post-Vaccination Case Breakdown

- Fully vaccinated: 51% (27/53)
- Unvaccinated/partially vaccinated: 40% (21/53)
- New patients awaiting vaccination: 9% (5/53)

CONCLUSIONS

Our study findings highlighted that pneumococcal vaccination reduces *Streptococcus pneumoniae* infections and severity of pneumonia among HD patients. These results support the rollout of universal pneumococcal vaccination in dialysis centres to improve clinical outcomes and reduce disease burden in this high-risk group.

REFERENCES

- Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group (2024). KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney international*, 105(4S), S117–S314. <https://doi.org/10.1016/j.kint.2023.10.018>

