"I don't know": The Typical Response when Taking Pneumococcal Immunization Histories in Kidney Transplant Candidates

Jahanavi M. Ramakrishna[1], Tambi Jarmi[2], Claudia R. Libertin[1]

[1] Division of Infectious Disease, Mayo Clinic, FL, [2] Department of Transplant, Mayo Clinic, FL,

Background

- Infections from *Streptococcus pneumoniae* occur in solid organ transplant patients at rate of 146 per 100,000 persons per year versus 11.5 per 100,000 persons per year in general population.
- The Center for Disease Control (CDC) and American Society of Transplantation (AST) recommend Prevnar 13 followed eight weeks later by Pneumovax 23 for those who are immunocompromised including:
  - CKD and nephrotic syndrome patients
  - Kidney Transplant (KT) candidates
- AST Guidelines support review and documentation of pneumococcal vaccines in KT candidate infectious disease (ID) evaluations.
- Despite the CDC and AST suggestions, studies report low rates of vaccine adherence in the KT candidate population.

Objective

To determine if a quality gap exists at Mayo Clinic Florida (MCF) in documenting, ordering and completing pneumococcal vaccinations for KT candidates undergoing ID evaluation at our Transplant Center.

Methodology

- **Study Population:**
  - All KT candidates evaluated at MCF Transplant Center from December 2, 2019 – January 14, 2020
  - All patients ≥ 18 years (pediatric KTs not performed at MCF)
  - Pregnant patients were excluded from this study
- **Data source:**
  - Internal MCF transplant database
  - Electronic health records (EHR)
- **Data Parameters:**
  - Patient characteristics (age, gender, etc.)
  - Patient immune status
  - Documentation related to Prevnar 13 and Pneumovax 23 in EHR note from pre-KT ID evaluation:
    - History of immunization
    - Immunization orders when appropriate
    - Follow-up to confirm completion of immunization
- **Outcomes:**
  - Known history and documentation rates of prior pneumococcal vaccinations (both Prevnar 13 and Pneumovax 23) by ID providers
  - Pneumococcal vaccine order frequency during ID pre-transplant evaluation when indicated
  - Pneumococcal vaccine order completion rate by documentation
- **Statistical Analysis:** simple descriptive statistics

Results

Figure 1. Summary of Pneumococcal Vaccine History, Order and Completion Data for Study Population

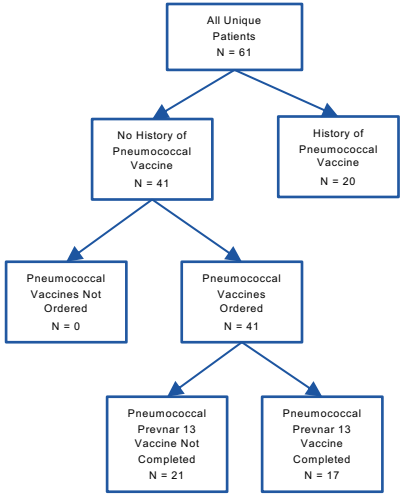

Table 1. Pneumococcal Vaccine History Documentation Rates Obtained by Patient Recall or Records

Pneumococcal Vaccine History	Total N=61 Prevnar 13 N (%)	Pneumovax 23 N (%)
Past History of Vaccination Known	20 (32.8)	20 (32.8)
No Past History of Vaccination Known by Patient Recorded	39 (63.9)	39 (63.9)
No Vaccine History Documented by ID	2 (3.3)	2 (3.3)

Table 2: Pneumococcal Vaccine Order Rates at Pre-Kidney Transplant Consultations

Pneumococcal Vaccine Orders by ID Providers	Total N=41 Prevnar 13 N (%)	Pneumovax 23 N (%)
Vaccine Order Given	38 (92.7)	41 (100)
No Vaccine Order Given	3 (7.3)	0 (0)

Table 3: Prevnar 13 Order Completion Rate by Documentation

Prevnar 13 Vaccine Completion	Total N=41 N (%)
No	21 (55.3)
Yes	17 (44.7)

- Sixty-one patients underwent KT evaluation during the study period of December 2, 2019 – January 14, 2020.
- Among the 61 patients, 20 (32.8%) and 20 (32.8%) had a known prior history of receiving Prevnar 13 and Pneumovax 23 vaccinations, respectively.
- Vaccine history was unknown for Prevnar 13 and Pneumovax 23 in 39 (63.9%) patients. Vaccine status was not documented by ID providers in 2 (3.3%) patients.
- When appropriate, ID providers ordered Prevnar 13 and Pneumovax 23 in 38 (92.7%) and 41 (100%) patients, respectively. Orders included both electronic and written documentation to account for patients planning immunization elsewhere.
- Of the 38 patients advised to receive the Prevnar 13 vaccine, 17 (41.5%) patients were documented completing immunization.
- Pneumovax 23 order completion rates were not recorded since the study period only lasted six weeks due to closure by COVID-19.

Discussion

- This study shows that patient recall is ineffective in determining if pneumococcal vaccines have been given in the past.
- Some studies suggest that ID consultation improves vaccine adherence in KT candidates.
- At MCF, despite our standard practice of ID consultations when evaluating KT candidates, vaccine history and documentation completed pneumococcal vaccines are suboptimal.
- Barriers to documentation and pneumococcal immunization in KT candidates at MCF's transplant center included: 1. poor patient recall, 2. insufficient documentation of past immunizations from external health facilities, and 3. difficulty in follow-up for MCF ordered immunizations that patients choose to receive at another institution.
- Since KT recipients are at higher risk for invasive pneumococcal infection than the general population, this quality gap in pneumococcal vaccine adherence in the pre-KT patient population is being addressed with a Quality Improvement Initiative.
- Potential areas of focus of quality improvement include: 1. portability of immunization records, 2. pre-KT patient education regarding the importance of vaccines, and 3. standard documentation of immunization history
- Limitation: Study was stopped early due to COVID pandemic.

Conclusions

- The data reflect a high number of patients who either do not recall or lack documentation of prior pneumococcal vaccination available at time of KT ID evaluation.
- Providers documented history of pneumococcal vaccinations extremely well, ordering vaccine when necessary.
- This study highlights lack of portability of immunization histories in a given patient population and opportunity for improved documentation of immunizations.

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Disclosures

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Correspondence

libertin.claudia@mayo.edu