Evaluating the appropriateness of vaccine administration in patients with splenectomy

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INTRODUCTION

- The spleen removes microorganisms from the bloodstream and produces antibodies for enhanced immune response.
- Patients with asplenia are at increased risk for infections caused by encapsulated organisms, such as *Streptococcus pneumoniae*, *Neisseria meningitidis*, and *Haemophilus influenzae.*
- Asplenic patients have a 6-fold increased risk of sepsis compared to the general population. Those that acquire an infection have a mortality rate of 80%.
- Vaccinations should include the meningococcal, influenza, pneumococcal and *Haemophilus influenzae* type B (Hib) vaccine.
- Vaccines should be administered at least 2 weeks prior to an elective splenectomy or 2 weeks post an emergent splenectomy.

OBJECTIVES

Primary Objective: To evaluate appropriateness of vaccine administration for asplenic patients with regards to vaccine selection, timing, and sequence.

METHODS

Study design: retrospective observational chart review approved by Northwell Health® IRB

Study period: July 2013 - July 2020

Population:

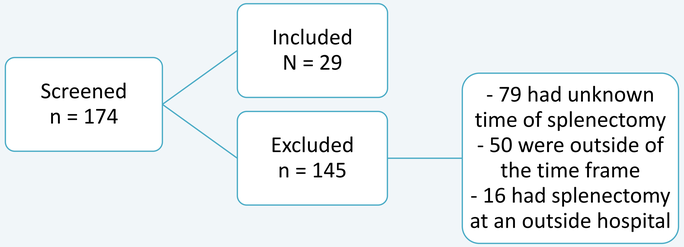
Inclusion Criteria	• Patients admitted to Long Island Jewish Medical Center (LIJMC) • Patients ≥ 18 years old • Splenectomy at LIJMC within the past 7 years
Exclusion Criteria	• Pregnancy • Patients admitted to an outside hospital for splenectomy • Patients with unknown time of splenectomy

Data collection: Utilized the electronic medical record to screen subjects, collect patient demographics (age, sex, past medical history, etc.), urgency of procedure, type of vaccine administered, sequence of vaccines, and timing of vaccine.

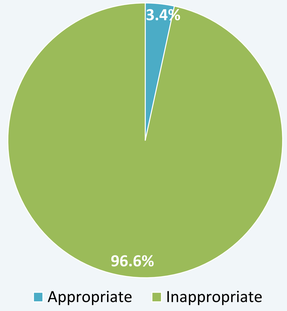
Statistical analysis: For continuous variables, descriptive statistics such as the mean and standard deviation were calculated to describe patient characteristics. For categorical variables, frequencies and percentages were calculated.

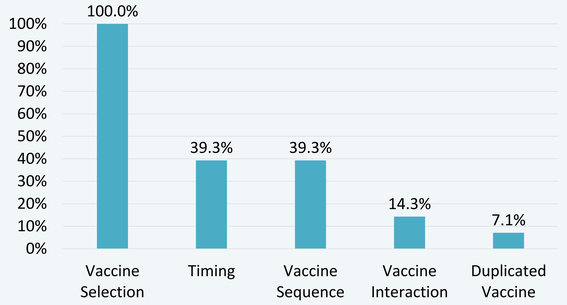
RESULTS

Enrollment



Appropriateness of Vaccine Regimen (N = 29)

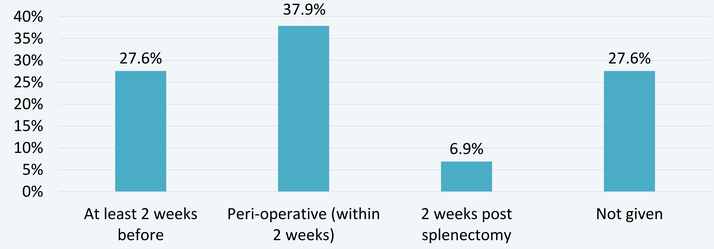




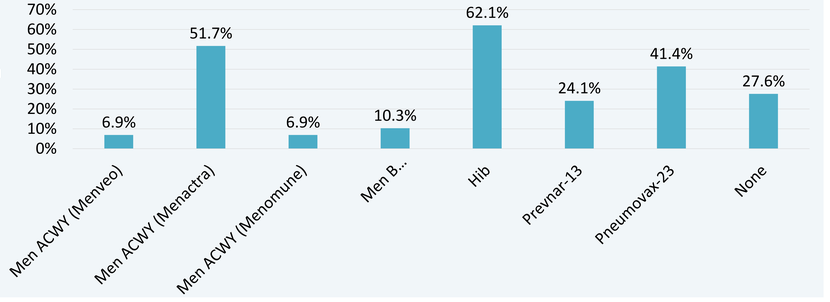
Baseline Characteristics

Baseline Characteristic	N = 29
Age (mean ± SD)	58.2 ± 20.6
Sex, male – no. (%)	17 (58.6)
Comorbidities – no. (%)	
Diabetes	3 (10.3)
Malignancy	21 (72.4)
Immunosuppression	3 (10.3)
None of the above	7 (24.1)
Race – no. (%)	
Caucasian	14 (48.3)
African American	7 (24.1)
Asian	6 (20.7)
Other or Multiracial	2 (6.9)
Urgency of procedure – no. (%)	
Elective (non-emergent)	20 (69.0)
Emergent	9 (31.0)

Vaccine Timing With Splenectomy (N = 29)



Vaccines Given (N = 29)



STUDY LIMITATIONS

- Small sample size
- Retrospective chart review
- Can't capture vaccines given outside of the system
- Performed before ACIP recommended Prevnar 20™ as a single dose

CONCLUSION

- Vaccines should be given at least 2 weeks before or after the procedure
- Do not give Prevnar13® and Menactra® together
- If giving both Pneumovax®23 and Prevnar13®, give Prevnar13® first
- Give all vaccines for encapsulated organisms (including Bexsero/Trumenba®)