Immunization Screening Prior to Initiation of Immune Modulating Medications: A Multi-site Study

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Background

- Pharmacists have a long-standing role in immunization uptake and increasingly provide care within different practice settings.
- One rapidly growing practice area is health system specialty pharmacies (HSSPs) serving patients on self-administered biologic therapies and oral small molecules, collectively referred to as immune modulating treatments, which have an increased risk for infection, including those derived from live vaccines.
- Information is limited on whether and how pharmacists may impact immunization rates prior to initiating immune mediating specialty medications, including biologic therapies (e.g. tumor necrosis factor inhibitors such as etanercept) and synthetic small molecules (e.g. JAK inhibitors such as tofacitinib).

Objectives

Our multi-site study aimed to describe the impact of HSSPs on immunization screening rates and outcomes in patients initiating self-administered immune modulating therapies.

Methods

- Prospective, observational cohort multi-site study.
- Data collection points include patient demographics, immune suppressing therapy initiated, treated specialty condition, vaccine assessment completion, vaccine assessed, outcome of assessment and intervention details.
- Study sites collected, de-identified, aggregated and uploaded site data to data aggregation platform (REDCap) using data collection template. Lead investigators aggregated all site data for collective analysis.
- Descriptive data presented as numbers and percentages; measures of central tendency presented as median with interquartile ranges.

Inclusion

- Prescribed immune modulating specialty medication between March 1, 2023 and May 31, 2023, inclusive
- Medication used to treat dermatologic, inflammatory bowel or rheumatologic condition

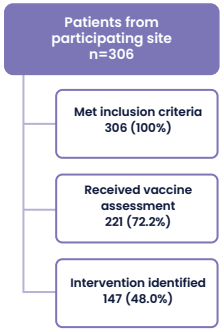
Exclusion

- <18 years
- Treatment with immune modulating specialty medication within prior year
- Prescription originated from outside the health system

Figure 1. Study timeline

Study enrollment					
Data collection					
March	April	May	June	July	August
2023					

Figure 2. Enrollment overview



RESULTS

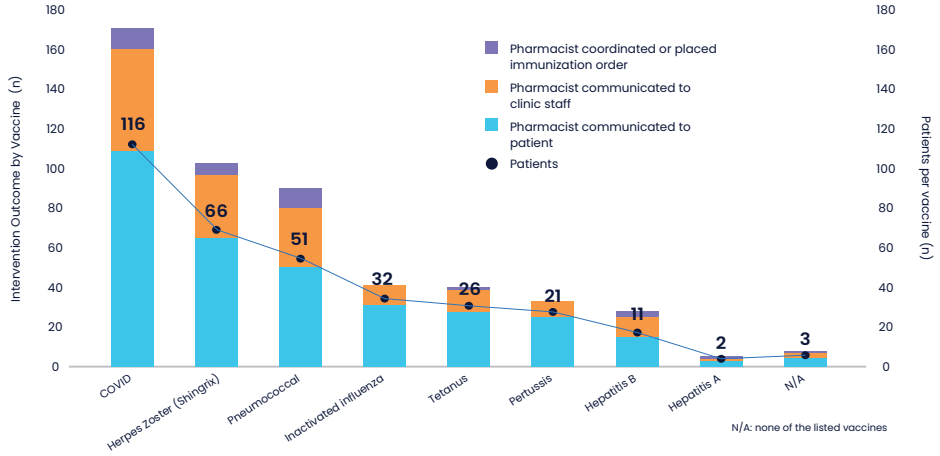
Table 1. Patient characteristics

Patient characteristics (n=306)	
Health system specialty pharmacy, n (%)	
Yale New Haven Health	129 (42.2)
Boston Medical Center	67 (21.9)
University of Rochester	61 (19.9)
University of Washington	30 (9.80)
University of Illinois Chicago	14 (4.58)
Froedtert Hospital	5 (1.63)
Age, years (IQR)	48 (35, 61)
Gender, n (%)	
Female	182 (59.5)
Male	122 (39.9)
Other	2 (0.7)
Race, n(%)	
White	179 (58.5)
Black or African American	58 (19.0)
Not available	35 (11.4)
Unknown	9 (2.94)
Other	8 (2.61)
Other Asian	7 (2.29)
Decline to Answer	4 (1.31)
Vietnamese	2 (0.65)
Asian Indian	2 (0.65)
Native Hawaiian/Pacific Islander	1 (0.33)
Chinese	1 (0.33)
American Indian/Alaska Native	0 (0)

Table 2. Clinical characteristics

Clinical characteristics (n=306)	
Clinical area*, n (%)	
Dermatology	138 (45.1)
Rheumatology	124 (40.5)
Gastroenterology	44 (14.4)
Pharmaceutical class*, n(%)	
Tumor necrosis factor inhibitor	169 (55.2)
Interleukin inhibitor	104 (34.0)
Janus kinase inhibitor	21 (6.9)
B-cell inhibitor	10 (3.3)
T-cell inhibitor	2 (0.7)
Intervention outcome, n(%)	
Pharmacist communicated to patient	137 (62.0)
No intervention identified	74 (33.5)
Pharmacist communicated to clinic staff	69 (31.2)
Pharmacist coordinated or placed immunization order	13(5.9)
Pharmacist recommended delaying therapy start	1 (0.5)
Pharmacist administered immunization	0 (0)
Collaborative practice agreement, n(%)	
Ordered vaccine	11 (3.6)
Administered vaccine	1 (0.3)

Figure 3. Intervention outcomes



Discussion

- Study patients were majority female, white and hailing from Northeastern region of the United States.
- Most immune suppressing therapies were initiated for dermatology and rheumatology indications.
- No interventions associated with human papillomavirus, measles, mumps and rubella or meningococcal vaccines.
- The volume of intervention outcomes per vaccine exceed the number of patients per intervened vaccine, suggesting pharmacists provided multiple immunization related services for each vaccine intervention.
- Only a small subset of vaccine services were provided under collaborative practice agreement. This may in part explain the large proportion of interventions communicated to the patient or clinic, who must then take additional steps to address the immunization gap. As such, there may be an opportunity to improve efficiency in safe initiation of immune suppressing agents.
- Despite well-established recognition of pharmacists as immunizers in the community setting, very few vaccine services were provided by HSSP pharmacists.

Conclusion

- High intervention rates to improve immunizations prior to immune modulating medications speak to the potential opportunity health system specialty pharmacies have in the safe initiation of self-administered immune suppressing therapies.
- Immunization screening coupled with vaccine administration under collaborative practice agreements may be a currently untapped mechanism to improve vaccination rates within the HSSP setting.

Limitations/Barriers

- HSSPs are highly integrated into health systems, limiting availability of a non-HSSP comparative group.
- Potential variability in definition of vaccine assessment that may have led to under reporting of assessments not associated with an intervention.

Acknowledgements

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