Rationale for Project at NU

- Vaccination rates, particularly for pneumococcal vaccine, believed to be low
- GIM, under Dr. Baker, had demonstrated ability to use EHR-based interventions to improve quality measures
- Could we leverage GIM experience, and our rheumatology insights, to improve vaccination rates in our RA population?

Background: Patient Self-Report of Vaccination Status

- Two cycles of telephone surveys: 2013 and again in 2014
- Eligible patients had a diagnosis of RA, at least one clinic visit in each of the previous two years, were ≥ 18 years old, and had English listed as preferred language.
- Survey took 10 minutes and assessed:
  - Self reported receipt of influenza (INFVX), pneumococcal (PVX) and zoster (ZVX) vaccines
  - Attitudes about vaccines, including reasons for not being vaccinated if applicable
  - Provider recommendations about these vaccines
- Electronic health record (EHR) query conducted for participants to ascertain vaccination status from medical chart and presence of biologic on active medication list

Intervention Description

- Clinician monthly performance feedback reports for INFVX, PVX, and ZVX
- EHR reminders and linked order set to alert clinicians when a patient needed vaccination and facilitate administration during a visit. Clinicians could record medical and patient exceptions to vaccination
- Outreach to patients needing vaccination via mail or secure messaging through the EHR patient portal regardless of whether they had in-person clinic visits

Evaluation Design

- We assessed vaccination rates monthly from six months prior to the intervention in October 2013 through September 2014 using EHR data
- We assessed the statistical significance of differences in vaccination rates pre and post intervention using chi-square tests
- NU IRB approved the study with a waiver of informed consent so all eligible patients were studied

Vaccination Rates Pre and Post Intervention

VACCINATION	Pre-Intervention (%)	Post-Intervention (%)
Influenza* (102, 101)		
- Ever Received	92 (90.2)	87 (86.1)
- Previous season	81 (79.4)	79 (78.2)
Pneumococcal (N) †	**362 (28.8)**	**635 (50.6)**
- Ever received, any type	360 (28.7)	573 (45.7)
• PPSV 23 only	351 (28.0)	291 (23.2)
• PCV 13 only	5 (0.4)	151 (12.0)
• PPSV 23 and PCV 13	4 (0.3)	131 (10.4)
- No PPSV, medical exception	0 (0)	9 (0.7)
- No PPSV, patient exception	2 (0.2)	51 (4.1)
- Done Elsewhere, Unknown Type	0 (0)	2 (0.2)
Herpes Zoster (N) †	**32**	**227 (18.1)**
- Ever received	32 (2.5)	57 (4.5)
- Prescription to do elsewhere, no record of receipt	0 (0)	28 (2.2)
- No HZV, medical exception	0 (0)	102 (8.1)
- No HZV, patient exception	0 (0)	46 (3.7)

**From patient survey data*
† From EHR data

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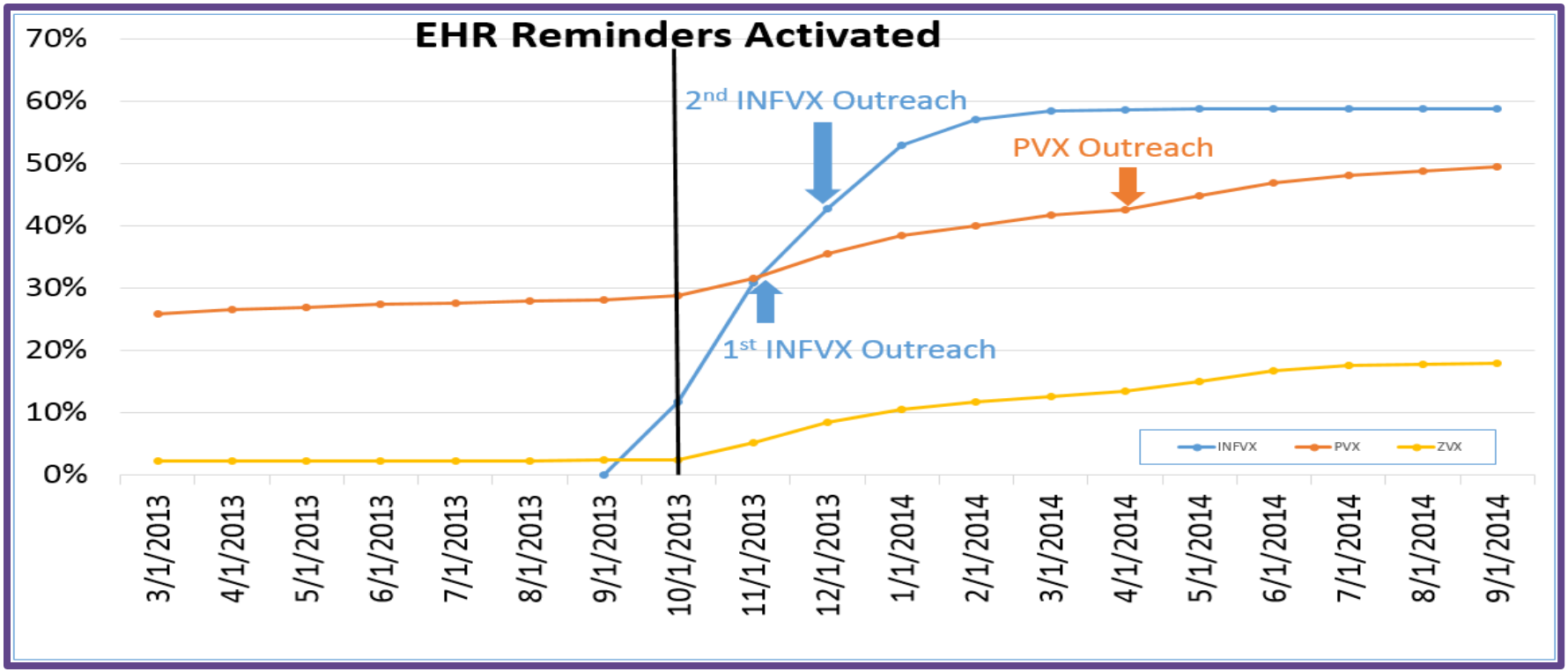
Rates of Vaccination and Recorded Exceptions Over the Study Period



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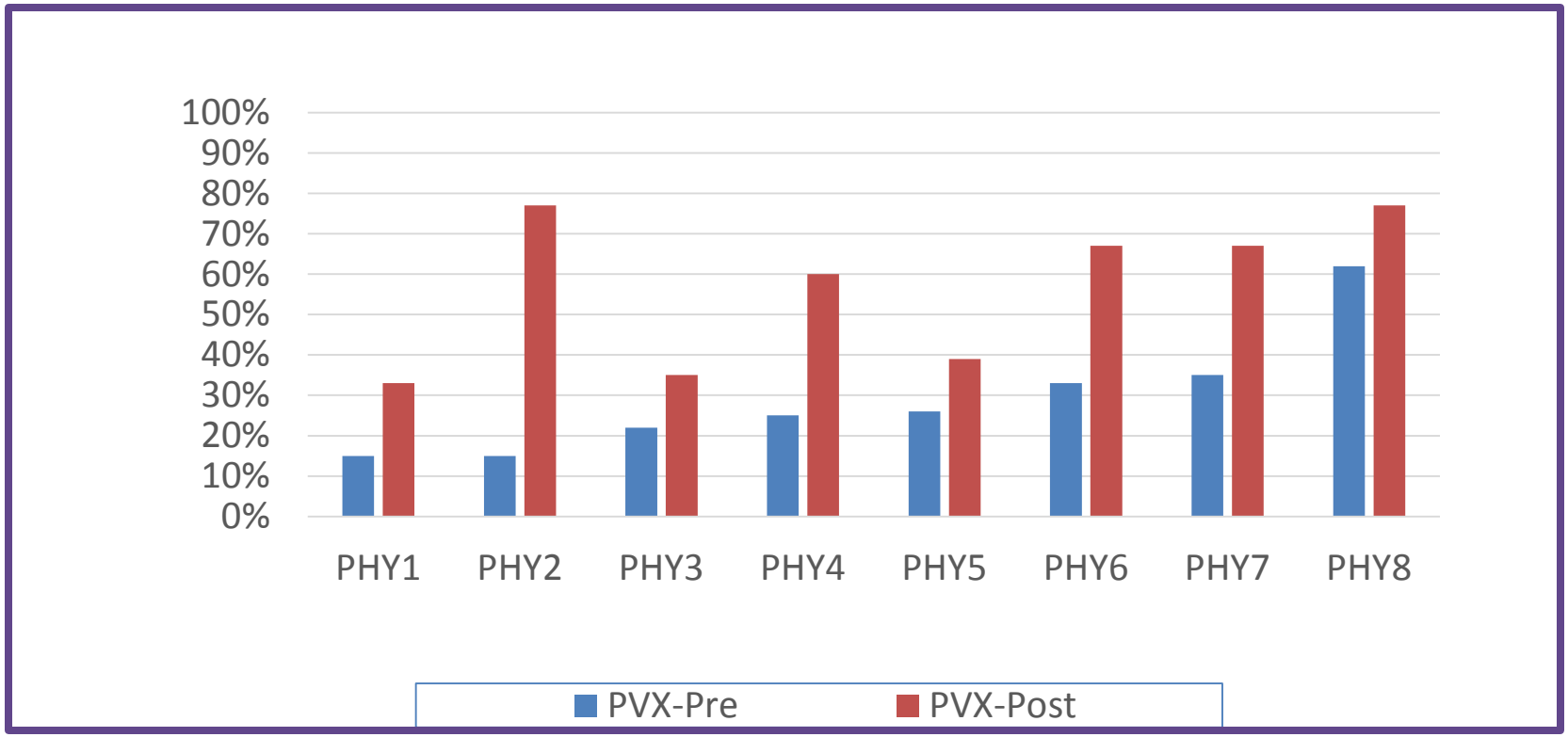
Variation in PVX Rate at Baseline and Follow-up for Individual Rheumatologists



Discussion

- Vaccination rates increased substantially following implementation of this multifaceted intervention.
- However, the rate of PVX vaccination remained much lower than rates we have achieved using similar interventions in our primary care clinic.
- ZVX rates remained quite low, even after accounting for patients currently on biologic therapy
- Reasons for suboptimal vaccination rates are unclear but could be due to rheumatologists' limited time to discuss prevention with patients or beliefs that vaccination is the responsibility of primary care MDs.