Leveraging Electronic Health Records to Improve Vaccination Rates for Patients with Rheumatoid Arthritis

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Background

- Rheumatoid Arthritis (RA) patients are inherently immunocompromised and frequently treated with immunosuppressives
- Thus, vaccinations are critically important, but vaccination rates among RA patients remain low
- Quality improvement interventions targeting primary care providers have improved vaccination rates
- We evaluated a multifaceted, system-level intervention leveraging electronic health records (EHR) to improve pneumococcal (PVX) and zoster (ZVX) vaccination rates among patients with RA

Methods

Setting & Participants

- Academic medical center rheumatology clinic in Chicago, IL.
- Study cohort included all adults seen in the clinic with a diagnosis of RA (N = 1255).

Intervention

- Clinician quarterly performance feedback reports of the PVX and ZVX rates according to EHR data
- EHR reminders and linked order set to alert clinicians when a patient needed PVX and ZVX and facilitate administration during a visit (Fig. 1). 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

- 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.
- Northwestern University IRB approved this study

Figure 1: Example of Reminder in EHR

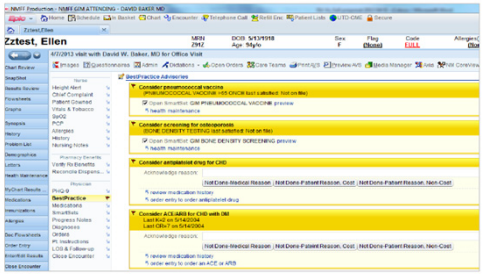


Table 1: Vaccination Rates Pre and Post Intervention

	Oct 2013 N(%)	Sept 2014 N(%)	p-value
PVX receipt	359 (28.6)	572 (45.6)	P<0.001
ZVX receipt*	31 (2.5)	55 (4.4)	P=0.01

* Received ZVX in clinic or prescription to receive elsewhere

Figure 2: Rates of Vaccination or Recorded Exceptions Over the Study Period

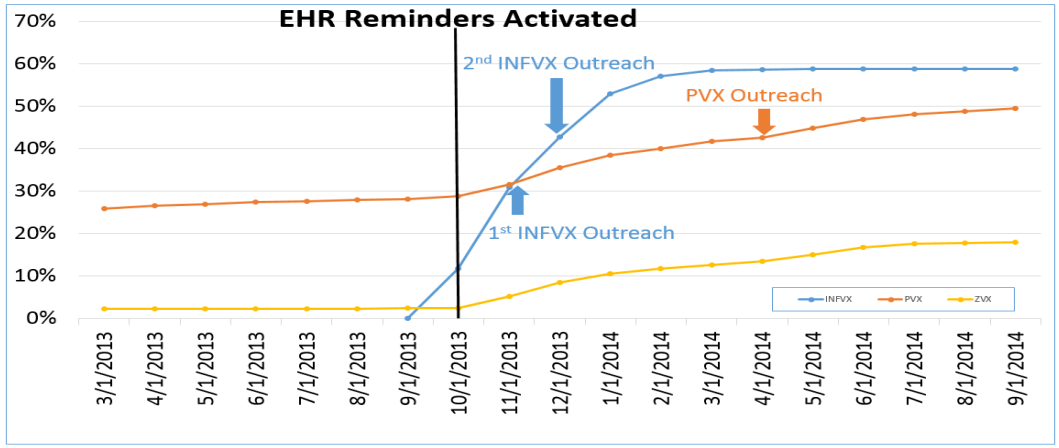
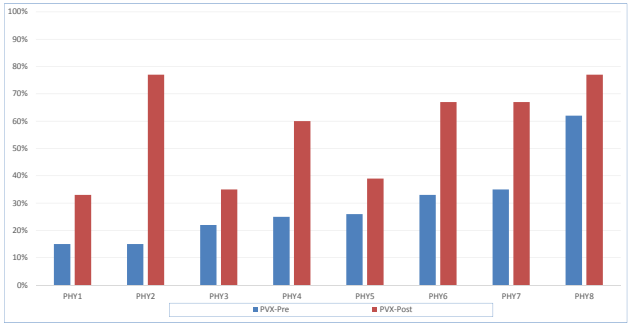


Figure 3: Variation in Pneumococcal Vaccination Rate at Baseline and Follow-up for Individual Rheumatologists



Results

- The proportion of patients up to date on PVX increased from 28.6 % to 45.6% (Table 1).
- The proportion of patients up to date on ZVX also increased but remained low (2.5% to 4.4%, Table 1).
- Reasons for not vaccinating patients were recorded frequently. For PVX, 11 patients had a documented medical exception and 58 had a documented refusal (49 non-cost, and 9 because of cost). For ZVX, 106 patients had a medical exception and 48 had a patient exception (38 non-cost and 10 cost) recorded.
- After the intervention began, PVX and ZVX rates (or documented exceptions) increased more rapidly than during the 6 months before the intervention (Figure 2).
- The amount of improvement for pneumococcal vaccination varied widely across physicians (Figure 3).

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.
- Confusion about recent PVX recommendations and uncertainty regarding ZVX administration in immunocompromised patients under age 60 may also contribute to suboptimal vaccination rates.
- Limitations: The study occurred at single site; EHR data may underestimate the true rate of vaccination.

Conclusion

- **Multifaceted interventions can improve vaccination rates for RA patients. Further research is necessary to elucidate why vaccination rates remain low.**

Funding: Pfizer Grant ID 8392087 (Ruderman, Baker, Co-PIs), NIH P60AR064464