A multi-component intervention increase adult immunization rates for four major vaccines within primary care

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Background

Adult vaccination rates are well below the Healthy People 2020 goals established by the CDC

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>2013</th>
<th>2020 goal</th>
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</thead>
<tbody>
<tr>
<td>Pneumococcal vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 18-64 yr</td>
<td>21.2%</td>
<td>60%</td>
</tr>
<tr>
<td>Age ≥ 65 yr</td>
<td>59.7%</td>
<td>90%</td>
</tr>
<tr>
<td>Influenza vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age ≥ 18 yr</td>
<td>42.2%</td>
<td>80%</td>
</tr>
<tr>
<td>Pertussis (Tdap) vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age ≥ 18 yr</td>
<td>14.2%</td>
<td>N/A</td>
</tr>
<tr>
<td>Herpes Zoster Vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age ≥ 60 yr</td>
<td>24.2%</td>
<td>30%</td>
</tr>
</tbody>
</table>
Prior Studies

Effective interventions to increase vaccination rates
• Audit and feedback
• Reminders
• Provider Financial Incentives
• Education
• Quality Improvement interventions involving a) personal contact with patients or b) shared responsibility with non-MD healthcare personnel
Objective

Assess effectiveness of a multi-component QI intervention to increase adult immunization rates for 4 vaccine preventable diseases -- influenza, pneumococcal pneumonia, pertussis (whooping cough), and herpes zoster (shingles)

Questions:
1. What is the pre- vs. post-intervention change in vaccination rates in eligible adult patients?
2. Do intervention clinics have greater improvement compared to control clinics?
Methods – Multi-component Intervention

• Online Audit & Feedback platform (MedConcert®)
• Multi-disciplinary educational resources
• Non-physician clinic champions
  • Nurses, medical assistants
• Pre-specified vaccine targets established by each clinic
• Monthly reports on clinic and provider performance for 4 vaccines
  • Electronic dashboard and printed reports
• Quarterly clinic champion calls
Learning Resources Created by Adult Immunization Project

Training Videos (Duke):
• Educating Patients & Families about Vaccines & Vaccine Preventable Diseases for Healthcare Professionals
• Preparing, Administering and Documenting Vaccines Given For Healthcare Professionals
• “Mini-Grand Rounds” series: Overview of adult vaccinations and uptake; Herpes Zoster; Tdap; Influenza; Pneumococcal (5 min each)
• Pfizer “Change the Exchange” videos: Evidence-based techniques for improving the conversation about vaccinations with adult patients (one for clinic staff, one for providers)

Online Modules:
Vaccine Basics for the Healthcare Professional (#1 of 3)
Understanding Vaccines (#2 of 3)
Dosing & Administering Vaccines (#3 of 3)

Educational Resources:
Tip Sheets: Documenting Patient Refusals, Coverage of Vaccines, Outside Messages in Epic, Protect Your Patients from Pneumococcal Disease
Training Manual
Pocket Card
Setting & Participants

- 24 intervention clinics -- 209,533 patients; 147 physicians, 46 NPs/PAs
- 6 control clinics -- 64,133 patients; 63 physicians, 12 NPs/PAs
- One health system in North Carolina
- Baseline period: April 1, 2015 – March 31, 2016
- Intervention period: September 1, 2016 – August 31, 2017
Methods – Analyses

Comparison of intervention and control clinics

• Continuous data: 2-sample t-tests or Wilcoxon rank-sum tests
• Categorical data: Pearson’s chi-squared test

Effectiveness of intervention

• Logistic regression models
• Generalized estimating equations methods to account for clustering of outcomes within clinics
• Analyses adjusted for baseline vaccinations rates and differences in case mix between intervention and control clinics
Results – Clinic comparisons

Intervention patients were

• Younger (mean age 51 yrs vs. control 53 yrs, p <0.0001)
• More females (60% vs. control 55%, p <0.0001)
• More insured (65% vs. control 58%, p <0.0001)
• Less Caucasians (65% vs. 72%, p <0.0001)

Added these as covariates in analyses
Vaccination Rates (Sep 1, 2016 – Aug 31, 2017)

Network Performance Dashboard
See how you compare. Identify your gaps. Decide which gap to improve.

Network Performance Snapshot

Measures (5)
- Tdap (Tetanus, Diphtheria,...
  - Patient Outliers
    - Trailing
  - Higher is better
    - Duke Vaccinates: The Adult Immunization Project
- Influenza Vaccination
  - Patient Outliers
    - Trailing
  - Higher is better
    - Duke Vaccinates: The Adult Immunization Project
- Herpes Zoster (Shingles)
  - Patient Outliers
    - Trailing
  - Higher is better
    - Duke Vaccinates: The Adult Immunization Project
- Pneumococcal Vaccination
  - Patient Outliers
    - Trailing
  - Higher is better
    - Duke Vaccinates: The Adult Immunization Project

Values in blue call-out boxes from baseline DPC network data (Apr 1, 2015 – Mar 31, 2016)
>20,000 MORE patients received important immunizations over the past 12 months

Values in blue call-out boxes from baseline DPC network data (Apr 1, 2015 – Mar 31, 2016)
**Results – Multivariable Analyses**

Patients in intervention clinics were more likely to receive:

- *Influenza vaccine* (adj. OR 1.56, 95% CI 1.30-1.88, p < 0.001)
- *Pneumococcal vaccine* (adj. OR 2.40, 95% CI 1.10-5.24, p=0.028)

No differences seen between intervention and control clinics for:

- *Tdap vaccine* (adj. OR 1.05, 95% CI 0.87 – 1.26, p=0.61)
- *Zoster vaccine* (adj. OR 1.16, 95% CI 0.90 – 1.49, p=0.25)
Open Mike: Best Practices; Questions for Peers

What’s worked at your clinic?

- Showing (parts of) training videos at staff meetings
- Mass-messaging MyChart reminders to get immunized

What vaccine-related challenges are you addressing and how?

- Medicare does not cover zoster in office, TdaP only after acute injury
- Patients aren’t always sure about vaccines received elsewhere

What do you do about ... ?

- Reports are shared in huddles
- Resource “book” kept in med area
- Displays for patients in exam rooms

How are you communicating in your clinic about vaccines?

Others?
Conclusion

• Implementing an evidence-based, multi-component intervention (A&F, clinic-defined targets, educational resources, non-physician clinic champions) resulted in absolute increases in adult immunization rates over a 12-month period for all 4 vaccines

• Adjusted analyses showed significantly higher influenza and pneumococcal vaccination rates in intervention clinics

• Non-physician clinic champions were key to success
Recognizing Our Champions

End-of-project celebration and dissemination held October 2017
Acknowledgements:

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Questions?