Optimizing Provider Decision-Making with Clinical Decision Support Tools and Behavioral Nudges

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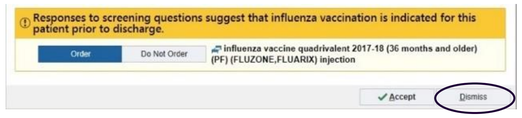
INTRODUCTION

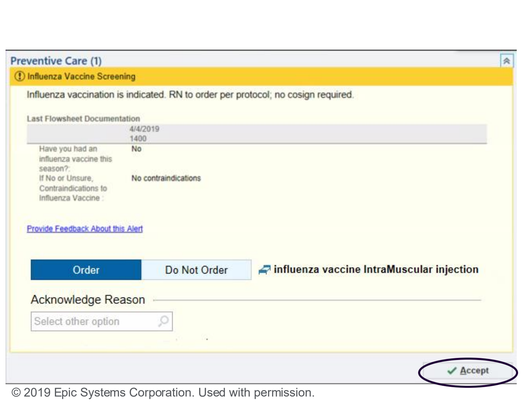
Done well, clinical decision support (CDS) tools can highlight errors, prompt best practice, and improve the quality of care. They can also annoy, cause alert fatigue, or simply be ignored. At NYU Langone we have implemented rapid randomized tests to improve the quality of our CDS tools. We incorporate elements from software development, behavioral science, and QI rapid-cycle RCTs to create simple and effective CDS tools. We share three key lessons based on our work building best practice advisory alerts, order sets and bot orders to nudge clinicians to prescribe medications, order imaging, offer flu vaccines and check VTE prophylaxis.

Lesson 1: Forcing a decision decreases alert firings

The earliest version of the flu vaccine alert was, on average, firing for a patient 23.1 times per day, and dismissed over 99.3% of the time. We tested whether removing the dismiss button would help, forcing providers to either select “order” or “do not order."



Previous alert had the option to dismiss without making a decision.



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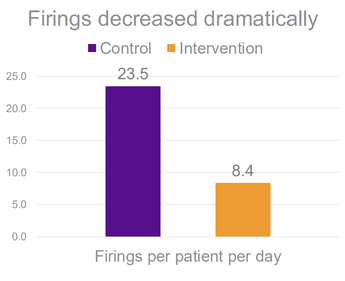
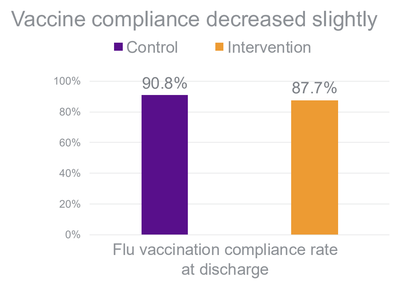
New alert no longer had the dismiss option. Providers selected an order option and pressed “Accept.”

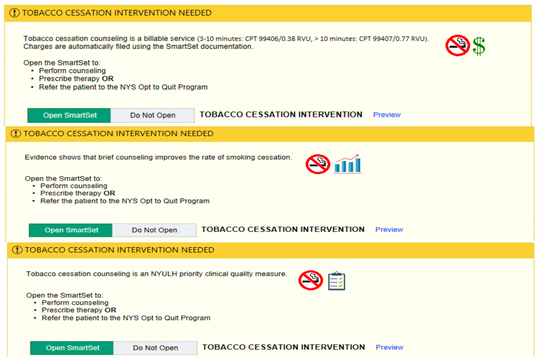




The data from a two-month trial period showed that removing the dismiss button forced action and reduced the alert firings, while only decreasing vaccination rates by 3.1 percentage points.

Lesson 2: Altering CDS wording improves alert effectiveness

Example 1, CDS Tobacco cessation: Increased tobacco cessation prescription by altering prompt language



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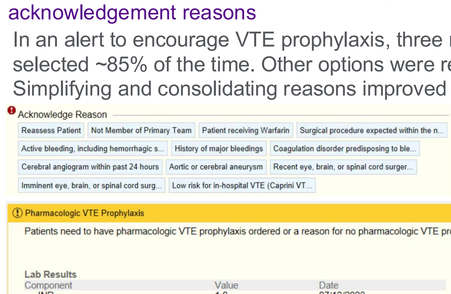
We varied the wording and images in our alert to include financial, evidence-based or institutional priority framing.

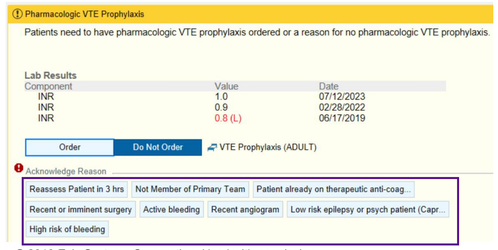


The framing for institutional priority was the only one that altered behavior.

Example 2, VTE Alert: Reduced alert fatigue by simplifying and reducing acknowledgement reasons

In an alert to encourage VTE prophylaxis, three reasons for no treatment were selected ~85% of the time. Other options were redundant or unreadable. Simplifying and consolidating reasons improved data capture.

Previous acknowledgement reasons



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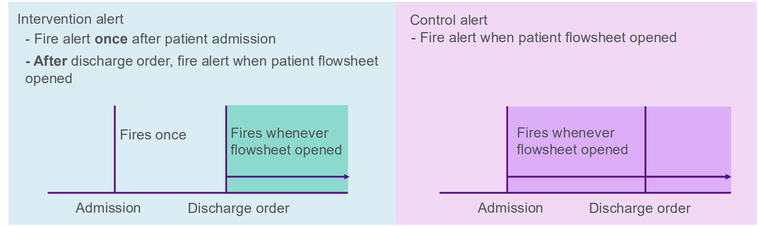
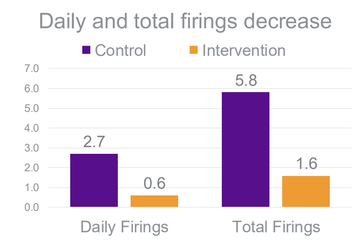
New alert with simplified acknowledgement reasons

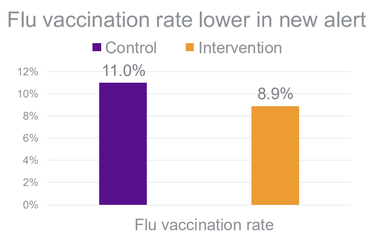
Lesson 3: Carefully selecting alert firing times and recipients reduces alert fatigue

Example 1, Flu Alert: firing once upon admission and after discharge order reduced daily firings significantly while slightly lowering flu vaccination rate

Previous version of flu vaccine alert was firing for a patient 2.3 times a day. We tested a new alert that fires once upon admission and then when the chart is opened after a discharge order is placed



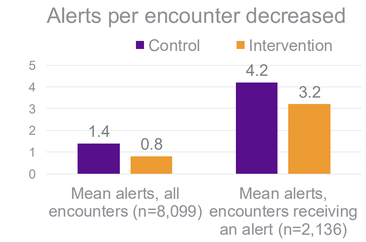


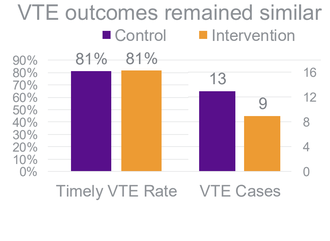


Data suggested that it would take 4 more firings per patient to raise the vaccination rate by 2% -- a level of alert burden that was not worth it.

Example 2, VTE alert: sending alert only to first contact provider and the attending reduced alert fatigue while maintaining rate of timely VTE prophylaxis

We tested two versions of the alert: one which fired for every staff member opening the patient chart, and another which fired only for the first contact provider and the attending.





New implementation estimated to prevent around 40,000 alerts per year.