STRATEGIES TO REDUCE COMPUTERIZED ALERTS IN AN ELECTRONIC PRESCRIBING SYSTEM

MELISSA BAYSARI, JOHANNA WESTBROOK, BRIAN EGAN, RICHARD DAY
Many studies show alerts can have positive and often substantial effects on prescribing behaviour.

But many studies report that doctors override alerts, up to 95% of the time.

Alert fatigue = primary reason for alert overrides.
AT OUR SITE...

We shadowed 14 teams doctors on ward-rounds (for 60 hr) and found:

Nearly ½ medication orders triggered an alert
Only 17% of alerts were read by prescribers
100% of alerts were overridden

We interviewed doctors and found:

Most doctors believed they received too many alerts and many were redundant
Some doctors felt they had become desensitized to the alerts because they were triggered too frequently
EFFECTIVE ALERTING

Getting alerts right is a major challenge!

Following the discovery that too many alerts are being presented, how do we decide what alerts to remove from the system?

Previous study¹:

Interviewed doctors & pharmacists

Found no alert types that all clinicians agreed could be turned off

Found specialties differed in the number and types of alerts they thought could be safely turned off

THE DELPHI TECHNIQUE

Group facilitation technique used to obtain consensus among experts in a systematic way

Consensus is reached by allowing participants to consider their responses in light of the overall groups’ responses

Delphi previously used to:

Identify appropriate information to include in alerts

Determine what information about the user and context is helpful in prioritizing and presenting alerts
STUDY AIM

To reach consensus among prescribers of different specialties and with various levels of experience on appropriate strategies for reducing alerts within our electronic prescribing system (e-PS)

No previous studies have used Delphi for this purpose

Previous Delphi research has included recruitment of experts in CPOE or decision support implementation, not users of the system
SITE & ALERTS

Study site: teaching hospital with 320 beds in Sydney, Australia

ePS: MedChart, used in all wards except ED

Alerts in MedChart:

- Allergy & intolerances
- Pregnancy
- Therapeutic duplication
- Local messages (hospital developed)

½ alerts are for information only, in 10% prescribers must enter an override reason, 7 alerts do not allow prescriber to continue
EXAMPLE ALERT

Paracetamol (500mg) Tablet

Substance Duplication

The patient has recently been prescribed or given Paracetamol (500mg) Tablet.

Action

- Override
- Remove

Comment
SURVEY DEVELOPMENT

10-question web-based survey

Input was sought from prescribers, pharmacists & clinical information system staff

In the survey, doctors were asked:

What alert types they found useful/not useful

What alert types, if any, they would remove from the system

To rate each alert type on a Likert scale of usefulness

Whether or not they believed 2 potential strategies for reducing alerts numbers would compromise patient safety:
POTENTIAL STRATEGIES

Identified in our previous work on alert fatigue:

1. Modifying most local messages so that they were presented as hyperlinks on the prescribing screen, rather than interruptive alerts

2. Modifying therapeutic duplication alerts so that they fired only when both medication orders were active, not when 1 was ceased within 24 hours
PROCEDURE

To recruit prescribers, an ad (with a link to the survey) was posted in the weekly JMO bulletin sent to all JMOs at the site (~300 prescribers)

In round 2, doctors were sent a personalized email containing a link to their round 2 survey

Feedback about round 1 responses were incorporated into each question in round 2:
Q2. If you could remove only one alert type from the current alert set in MedChart, which type would you remove?

In round 1, you selected ‘Pregnancy’.

☐ Allergy & intolerances (2%)
☐ Pregnancy (34%)
☐ Therapeutic duplication (28%)
☐ Local rule (13%)
☐ None, I’d not remove any alert type (23%)
CONSENSUS

Consensus was defined as 80% agreement between participants on questions requiring a single response.

Although consensus was not reached after 2 rounds, response stability was apparent, making it unlikely that participants would change views during a 3rd round.
## Respondents

Round 1: 47 prescribers, Round 2: 21 prescribers

Various specialties and levels of experience (1-9 yr post degree)

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AREAS WHERE CONSENSUS WAS REACHED

Prescribers agreed on what alert type should be retained

81% rated Allergy & intolerance alerts as the most useful alert type

No participant believed this alert type should be removed

All participants rated this alert type as ‘often’ or ‘sometimes’ useful

Prescribers agreed that our suggested strategies would work

95% thought that changing local messages so they appeared as hyperlinks on the prescribing screen would be safe

91% thought that changing duplication warnings so they only fired when both orders were active would be safe
AREAS WHERE NO CONSENSUS WAS REACHED

Prescriber responses to the question ‘If you could remove one alert type from the current alert set in MedChart, which type would you remove?’
Prescriber responses to the question ‘How useful is each alert type in warning you about prescribing something potentially dangerous for your patients?’
DISCUSSION

We identified some strategies that users viewed as appropriate for reducing alert numbers

1. Present local messages as hyperlinks
   Not unexpected because many messages provide low priority information

2. Ensure duplication alerts trigger for 2 active orders – this would eliminate more than \( \frac{1}{2} \) of these alerts
   24 h time-frame is only useful for a small number of medications (e.g. colchicine)
DISCUSSION 2

Allergy & intolerance alerts were viewed as most useful

These are patient tailored – only triggered for patients prescribed medications containing a generic component to which the patient has a recorded allergy/intolerance

Pregnancy alerts should be designed in this way

Study limitations: Only 21 participants completed both rounds, not all specialties were represented in round 2, we did not explore reasons for perceived usefulness
USER INVOLVEMENT

Involving users in customization of alerts proved to be a successful approach

User involvement in system design has been shown to result in greater system usage and satisfaction

-> we expect greater ownership and acceptance of alerts by prescribers
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Contact: m.baysari@unsw.edu.au