SOUTHERN ILLINOIS UNIVERSITY EDWARDSVILLE

Reducing Provider Alert Fatigue in a Hospital System: Turning Down the Noise and Pumping Up Patient Safety

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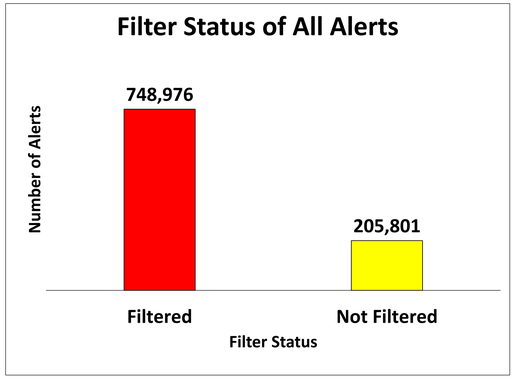
BACKGROUND

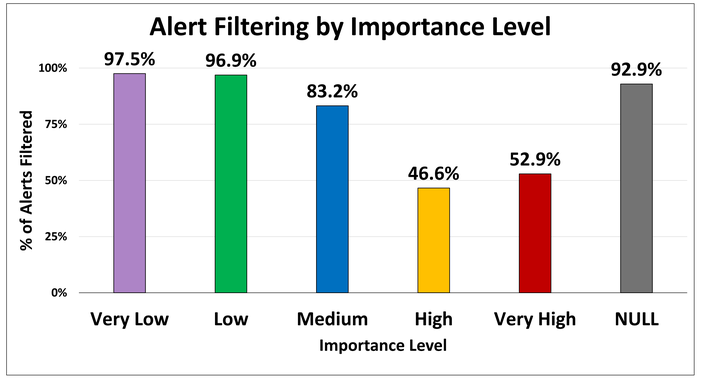
- Alerts are “warnings or informational pop-ups” in electronic healthcare record systems that can warn providers about potential issues regarding treatments.[1]
- Alerts can include drug-drug interactions, drug allergies, inappropriate dosages, and other warnings.
- Alerts help prevent adverse patient outcomes, but frequent alerts can lead to provider alert fatigue, wherein providers may “become desensitized to safety alerts” and “ignore or fail to respond appropriately to such warnings.”[1]
- Pharmacy informaticist teams can examine the underlying information for each alert to understand its context.
- Using this information, pharmacy informaticists can identify areas for improvement, filtering unnecessary alerts before providers see them and making sure that alerts that adjust providers’ care decisions always appear.

METHODS

- The goal was to measure the current quality of medication alerts in the system. This was done by analyzing alert filtering rates, overrides, and identifying patterns for potential successes or improvements.
- A Microsoft SQL Server® query performed on-site gathered 12 weeks of hospital alert data, comprising 954,777 total alerts.
- Data was deidentified and irrelevant categories were removed.
- All alerts were examined in Microsoft Excel ® using pivot tables, to see what alerts are already filtered, which are overridden by providers, and which are seen and help adjust treatment decisions.

RESULTS





% of Alerts Filtered by Alert Status	
Alert Status	% of Alerts Filtered
Drug-Disease	94.5%
Age/Sex	90.5%
Drug-Drug	86.2%
Dose	84.2%
Lactation	82.3%
Pregnancy	56.5%
Duplicate Medication Order	5.0%
Drug-Allergy	3.3%
Duplicate Therapy	3.0%
Error when checking interactions	0.0%

Decision-Making for Non-Filtered Alerts	
Decision-Making Reason	% of Alerts Overridden
Benefit Outweighs Risk	87.2%
Clinically Not Significant	99.0%
Clinician Reviewed	88.9%
Historical Med/On Med Previously	97.4%
Insignificant	97.4%
Interaction with Discontinued Med	87.1%
Intolerance (Not Allergy)	97.9%
Low Risk	95.4%
NULL (Not Classified)	0.0%
Patient Made Aware	100.0%

Top 10 Drug-Drug Interaction Overrides		
Drug-Drug Interaction	Number of Overrides	% of Alerts Overridden
Serotonergic Opioids *(High Risk)* / SSRIs	4,176	86.2%
Ceftriaxone / Calcium Salts	1,936	73.0%
Serotonergic Opioids *(High Risk)* / Tramadol	1,758	82.3%
Anticoagulants / Amiodarone	1,737	70.4%
Aspirin / SSRIs	1,350	39.2%
Morphine / P-Glycoprotein / ABCB1 Inhibitors	1,174	39.5%
SSRIs / Serotonergic Non-Opioid CNS Depressants	1,054	84.0%
Anticoagulants / Corticosteroids	876	42.8%
Serotonergic Opioids *(High Risk)* / Serotonergic Non-Opioid CNS Depressants	840	82.4%
Metoprolol / Strong CYP2D6 Inhibitors	759	83.6%

CONCLUSION

- 78.5% of total alerts are filtered before reaching providers; of non-filtered alerts, 66.7% are overridden.
- *Drug-Drug* interactions have varied override rates.
- Higher importance level alerts are filtered less.
- *Duplicate Medication Order*, *Drug-Allergy*, *Duplicate Therapy*, and *Error when checking interactions* alert categories have the lowest filter rates.

DISCUSSION

- This override rate (66.7%) is in-line or better than previous studies from other healthcare systems.[2,3]
- It is appropriate that the *High* and *Very High* importance categories are filtered less, since they encompass medication warnings with greater concern.
- There is an opportunity to optimize drug-drug alert filtering given the varied override rates shown in the Top 10 table. The *Drug-Drug* category is an effective tool for finding potential optimization opportunities.

References

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2. Bryant, A. D., Fletcher, G. S., & Payne, T. H. (2014). Drug interaction alert override rates in the Meaningful Use era. Applied clinical informatics, 5(03), 802-813.
3. Yoo, J., Lee, J., Rhee, P. L., Chang, D. K., Kang, M., Choi, J. S., ... & Cha, W. C. (2020). Alert override patterns with a medication clinical decision support system in an academic emergency department: retrospective descriptive study. JMIR Medical Informatics, 8(11), e23351.

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