ANALYSIS OF AUTO-VERIFIED MEDICATION ORDERS

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INTRODUCTION

- Auto-verification utilizes rule-based algorithms to determine which orders could be verified without a pharmacist review
- Approximately 62% of hospitals utilize auto-verification functionality within their EHR[1]
  - To reduce pharmacists' workload and medication turnaround time from order entry while maintaining quality patient care[2,3,4]
- The Joint Commission statement on the necessity of a pharmacist reviewing all medication orders for appropriateness prior to administration[5]
  - Potential for unnecessary burden on pharmacy staff
  - Increase risk of missing relevant potential safety issues

OBJECTIVES

The objective of this study was to demonstrate the safety and efficiency of utilizing auto-verification through a review of auto-verified medication orders.

METHODS

- Data was extracted from Epic's Clarity database via structured query language (SQL)
- Medication orders with "STAT" or "Include Now" priority were identified within VUMC Adult or Psychiatry Hospital
  - Verification type = "Auto Verification" vs "Verify"

July 1, 2018 → **July 1, 2021**

Primary endpoint

- Estimate time saved by using auto-verification

Secondary endpoints

- Wrong patient auto-verified medications (retract and reorder)
- CPOE alerts that stopped auto-verification
- ADS overrides
- Time from order entry to administration

VUMC Always Autoverify Rules

- Imaging Contrasts
- Radiopharmaceuticals
- Unchanged Dialysis Therapy Plan Orders
- Breast Milk/Formula
- Select Floor stock/ADC areas
  - Emergency
  - PACU
- Medication record says 'Always Autoverify"

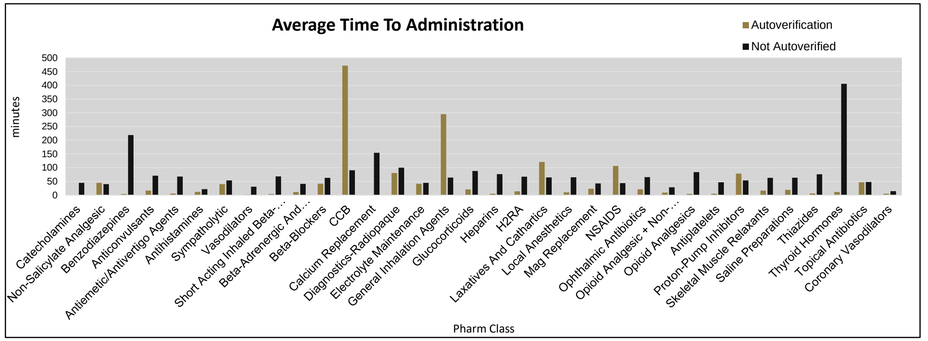
VUMC No Autoverify Rules

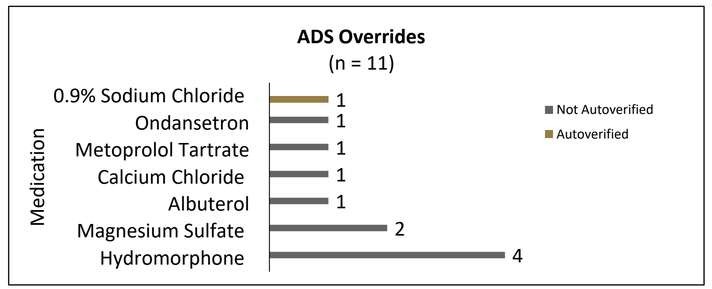
1 and (2 or 3 or 4)

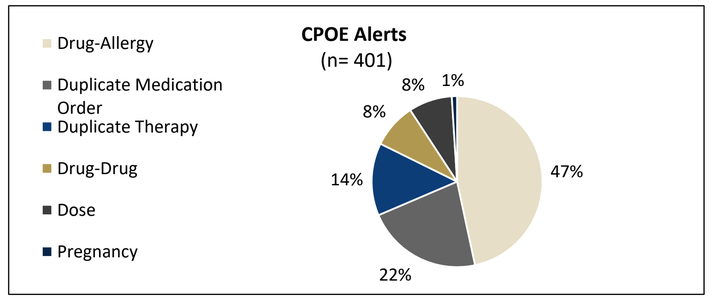
1. Adult Hospital or Psychiatry Hospital
2. High or Very High importance warning
3. Medication record says "No Auto Verify Adult" or "Dual Verify"
4. Medication is in value set "No Auto Verify" (i.e. Systemic Antibiotics)

PRELIMINARY RESULTS (SEPT 1, 2021 - SEPT 30, 2021)

Medication	Autoverification Doses	Prospective Review: Avg Time From Order Entry To Verification (min)	Estimated Time Saved (min)
Albuterol	1	8	8
Calcium Chloride	1	1	1
Hydromorphone	4	1 ± 0.5	2 - 6
Magnesium Sulfate	2	4 ± 0.7	6.6 – 9.4
Metoprolol Tartrate	1	6	6
Ondansetron	7	1	7







SUMMARY AND NEXT STEPS

Primary endpoint

- Estimated time saved by utilizing autoverification: 30.6 – 37.4 minutes

Secondary endpoints

- No auto-verified orders were retracted and reordered
- 401 alerts fired stopping auto-verification
  - Majority of alerts: Drug-Allergy (n = 187), Duplicate Medication Orders (n = 88), Duplicate Therapy (n = 35)
- 1 order of 0.9% Sodium Chloride overridden in ADS before auto-verification of medication order
  - 10 medication orders were overridden in ADS cabinet before prospective review
- Overall, decrease in time from order entry to administration with utilizing autoverification

Next Steps

- Analyze data from July 1, 2018 to July 1, 2021
- Consider adjusting autoverification rules to facilitate maintenance
- Collaborate with other Epic Institutions to compare results

REFERENCES

1. Pederson CA. ASHP national survey of pharmacy practice in hospital settings: prescribing and transcribing-2019. Am J Health-Syst Pharm. 2020;77(13):1026-1050
2. Poikonen J. An informatics perspective on nearly universal prospective order review. Am J Health-Syst Pharm. 2009;66:704-5.
3. Tribble DA. Automating order review is delegation, not abdication. Am J Health-Syst Pharm. 2009;66:1078-9.
4. Flynn AJ. Opportunity cost of pharmacist' nearly universal prospective order review. *Am J Health-Syst Pharm.* 2009;66:668-70.
5. Mansur JM. Top Joint Commission Compliance Challenges. Q&A. Pharm Purch Prod. 2015 Nov.

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