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Evaluating the Decrease in Medication Errors Using IV Pump Electronic Health Record (EHR) Integration

By Jackson Kondak

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Introduction

- Manual programming of ICU Medical PLUM 360 Pumps leads to high error opportunity
 - Patients receive wrong dose, rate, medication
- In 2020, ISMP Board (Institute of Safe Medical Practices) recommended health networks switch to interoperability within 5-7 years
- Interoperability reduces error risk
 - Auto-programming with computer and pump communication
 - Decreases 17 steps to 7 steps
 - Utilizes a drug library that stays current with pharmaceutical technology
 - Bi-directional pathway allows for prescription sent to pump and documentation back to EHR verifying infusion
 - Enhances efficiency and reduces stress for nurses
- Does interoperability reduce medication errors?

Objectives

- Evaluate the function of integration using ICU Medical IV pumps
- List error prone medications
- Determine mitigation processes to decrease these errors

Results

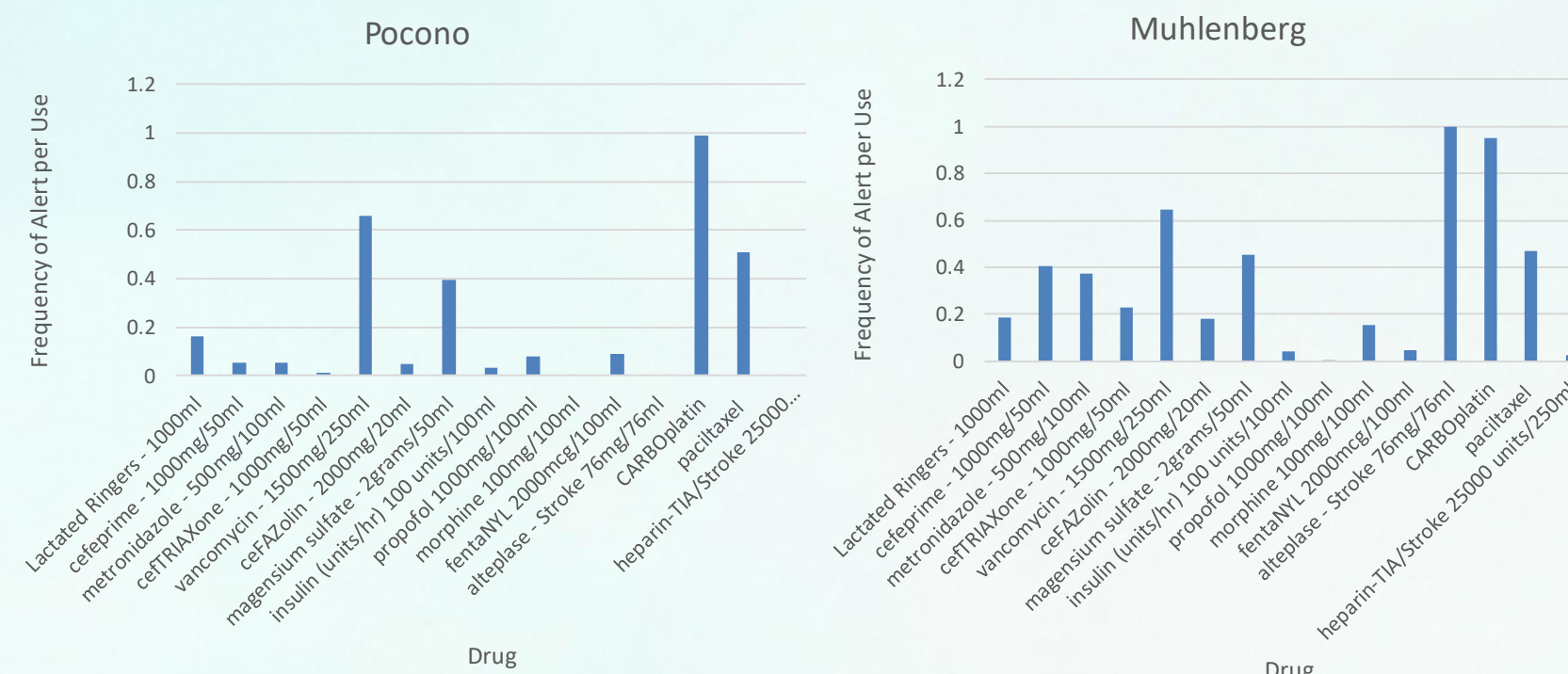


Figure 1 and 2: MedNet alerts per use of error prone medications between integrated site (Pocono) and non-integrated site (Muhlenberg) from 6/07/23 – 6/28/23.

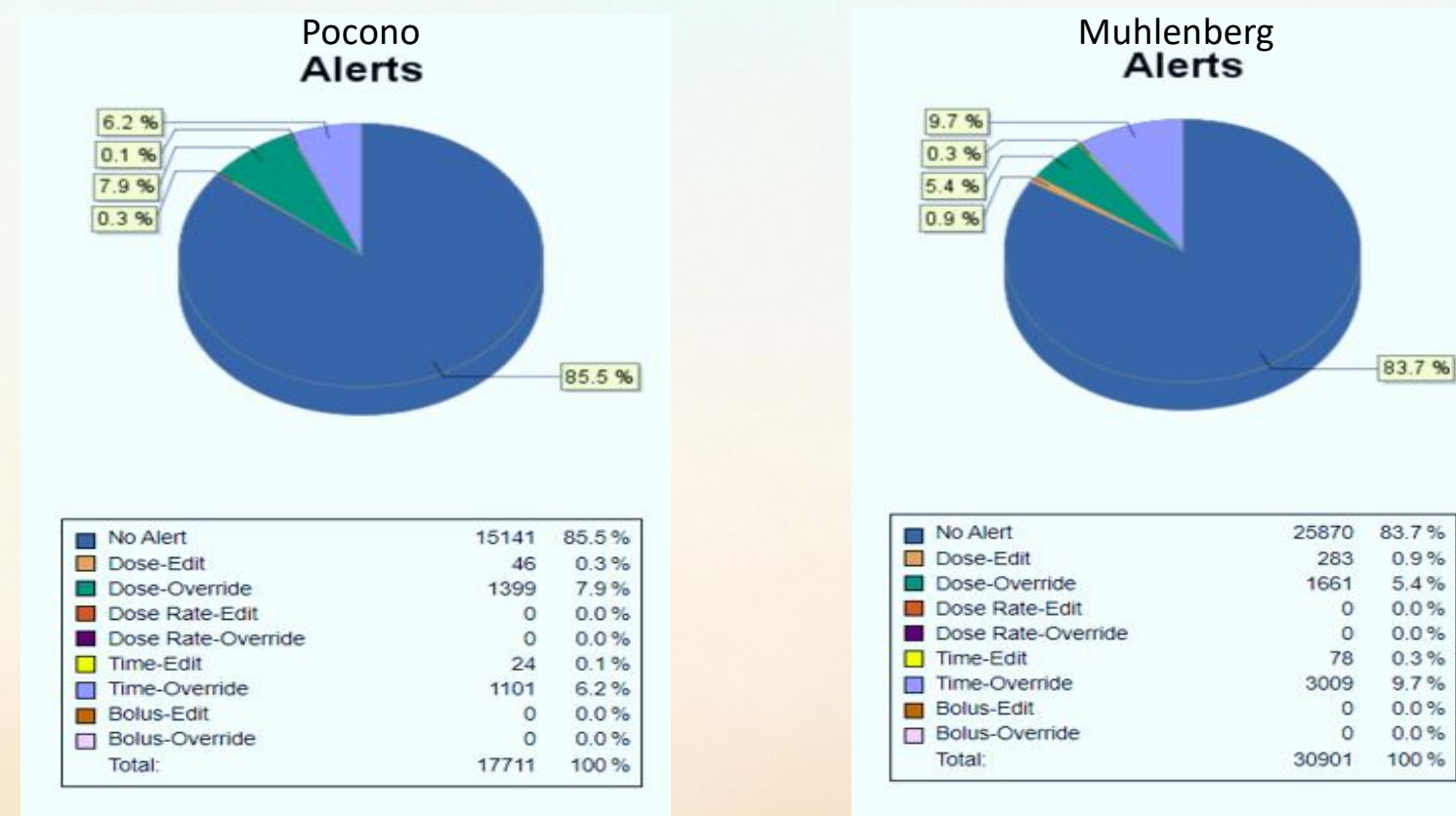


Figure 3 and 4: MedNet infusion summary of alerts per program between integrated site (Pocono) and non-integrated site (Muhlenberg) from 6/05/23 – 7/05/23.

Methods

- Content analysis of FMEA and MedNet
- FMEA (Failure Mode and Effects Analysis)
 - Used to identify and mitigate potential risks/errors
 - Utilizes “Risk Priority Number” as standardized value for comparison
 - $Severity * Occurrence * Detection = RPN$
 - Solution gets new rating
- MedNet
 - Database of large volume infusions throughout network
 - “Medications Infused by Medication”
 - Identifies alerts and frequency of specific drug
 - Filter applied to generate figures 1 and 2
 - “Infusion Summary”
 - Categorizes infusions and alerts
 - Drug library compliance rates
 - Filter applied to generate figures 3 and 4

Step 1:
Identify the errors and solutions

Step 2:
Seek quantitative data as evidence

Conclusion

- Safety improved medications
 - Integration decreases error in certain medications, typically continuous drugs
 - Chemotherapy drugs remain high in alert
- Integrated vs Non-integrated
 - Integration resolves many causes for error due to less alerts
- Transition to integration
 - New process and adjustment period; greater compliance rates with more training and monitoring outcomes
- Integration → More efficient work environment

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