



Omni-Sell Out

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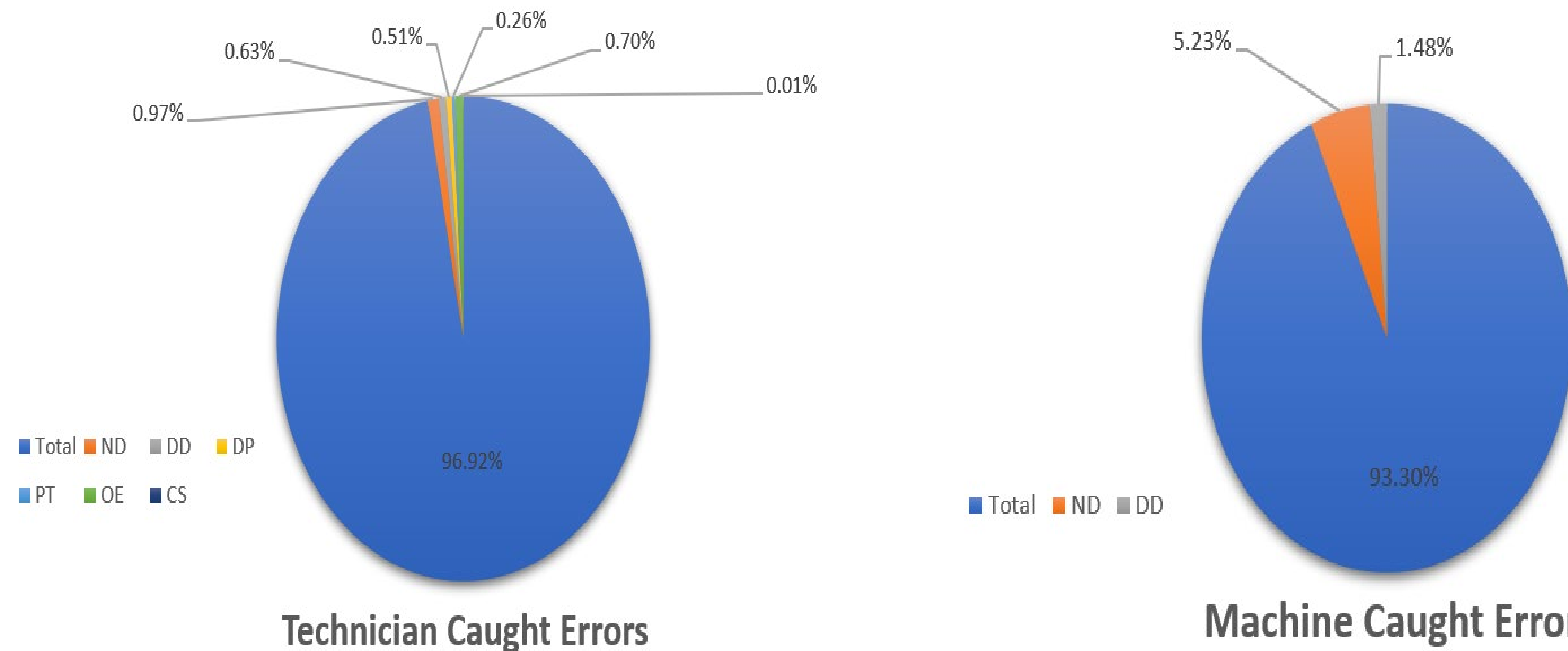
BACKGROUND

- Mac Rx of Missouri is a long-term care facility established in July 2023. One of the benefits of the facility is the Accuflex 3 which allows technicians to fill, seal, and label approximately 3.5 prescriptions per minute.
- The Accuflex 3 model was released to the public in 2006, but not a lot of research has been completed on the productivity of these specific machines in pharmacy settings.
- The researcher noticed that the number of errors they were catching, which the machine was not alerting to, was greater than anticipated. This realization led to the desire to analyze the errors to determine how to increase productivity of the Accuflex 3, as well as how to decrease the number of errors the machine produces overall. The researcher would like to assess this by tracking the number of errors caught by a technician versus the number of errors alerted by the machine.
- One previous study demonstrate how robotic dispensing systems can decrease overall pharmacy workflow such as customer service workflows, receiving stock, inventory stocking processes, separation of orders, invoicing of online orders, and packaging of online orders. However, this study focuses on a different machine compared to the Accuflex 3.
- Another study suggests unit dose drug dispensing systems enhanced medication safety by lowering overall medication errors by 45–70% and reducing medication administration errors (MAEs) from 19.5% to 15.8%, with harmful MAEs dropping from 3.0% to 0.3%.
- More research can be completed to assess how to improve productivity and decrease errors of the Accuflex 3 at Mac Rx of Missouri.

METHODS

The study followed the researcher over a total of 30 shifts. The shifts began September 8th, 2024, and go through December 21st, 2024. During each shift the pharmacy intern worked, they kept a tally of specific errors the machine makes that the technician catches versus the errors the machine makes and flags as rejected. A tally of the data collected could be found in a notebook that the researcher left on-site at the Mac Rx facility. Types of errors the technician followed include no drop, double-drop, partial pill, and different pill. An explanation of errors as follows: no drop (ND) - no pill is dropped into the bubble; pill will need to be manually replaced; double-drop (DD) - more than one pill is dropped into a bubble, pill will need to be manually removed; partial pill (PP) - a part of a pill was dropped into a bubble, pill will need to manually be replaced; different pill (DP) - a pill other than the pill needed to drop was dropped, pill will need to be manually removed and replaced. After one of these errors occurred, the technician labeled the card with an orange sticker to inform the pharmacist it was manipulated. Contact support (CS) is also an error the technician tracks. Contact support data points are collected each time the technician must call Omnicell support for remote assistance.

RESULTS



All data was collected during 30 shifts the researcher worked during the timespan between September 8th, 2024, through December 21st, 2024. Over the 30 shifts, a total of 11,567 prescriptions were filled by the researcher using the Accuflex 3 machine. The technician caught 116 no drop errors and 75 double drop errors the machine did not alert to. Other data points collected, such as different pills, partial tablets, order entry, and contact support are not data points the machine could alert to but errors the technician felt were important to assess to show importance of technician involvement. A total of 61 different pills were caught by the technician, 31 partial tablets, and 83 order entry issues. Throughout the 30 days of shifts, the researcher only had to contact Omnicell support once. The vast majority of processed prescriptions, 96.92%, did not result in errors detected by the technician. The remaining approximately three percent of various errors can be broken down as 0.97% being no drop, 0.63% being double drop, 0.51% being different pills, 0.26% being partial tablets, 0.70% being order entry issues, and 0.01% resulted in having to contact support. The most prevalent error the technician caught was no drop which could indicate a need for further analysis. When assessing the errors the machine caught, 648 errors were no drops, and 183 errors were double drop. It is prevalent that the machine functions most of the time without errors, this is demonstrated as 93.30% of the time. The machine detected 5.23% of the total fill being no drop errors. The other error the machine can detect is double drops where the machine dispensed more than the required dose. The machine detected a total of 1.48% double drops during the 30-shift period.

EXCEPTIONAL OUTCOMES

Further analyzing the no drop errors and the double drop errors, there is more prevalence when comparing the technician caught errors versus the machine caught errors. For the no drop errors 116 were caught by the technician and 648 were caught by the machine. However, when comparing these values, the machine failed to detect 17.90% of no drop errors calculated during the 30-shift period. Evaluating the double drop errors in a similar manner, the machine failed to detect 40.98% of double drops throughout the 30-shift period.

LESSONS LEARNED

Throughout the study it became prevalent that issues with no drops and double drops occurred due to a few possible reasons: cleanliness of the machine, cassette refinement, and staff training. The findings of this study also highlight the critical role of technician oversight in identifying and mitigating medication dispensing errors. Not only is it important that technicians know how to properly use and maintain the machine, but it is equally important that they are taught to verify each card they come across before sealing the card. The data indicates that while automated dispensing systems like the Accuflex 3 successfully catch a significant portion of errors, certain discrepancies, such as dropped pills, partial tablets, and order entry errors, are more effectively identified through human verification. These results reinforce the necessity of combining machine accuracy with technician oversight to ensure the highest level of patient safety.

FUTURE PLANS

- There could be benefit from additional research that tracks the total fills of the Accuflex over a 30-day period that accommodates all prescriptions filled by all employees at the Accuflex during the 30-day period.

CONCLUSION

- Ultimately, this study reinforces that while automated dispensing systems like the Accuflex 3 are valuable tools in pharmacy operations, they require continuous oversight and optimization to function at their highest potential. By addressing identified weaknesses and leveraging both technology and human expertise, pharmacies can maximize efficiency while ensuring safe and accurate medication dispensing for long-term care facilities.