An Evaluation of Multiple Interventions to Reduce the Frequency of Significant Medication Errors

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Introduction

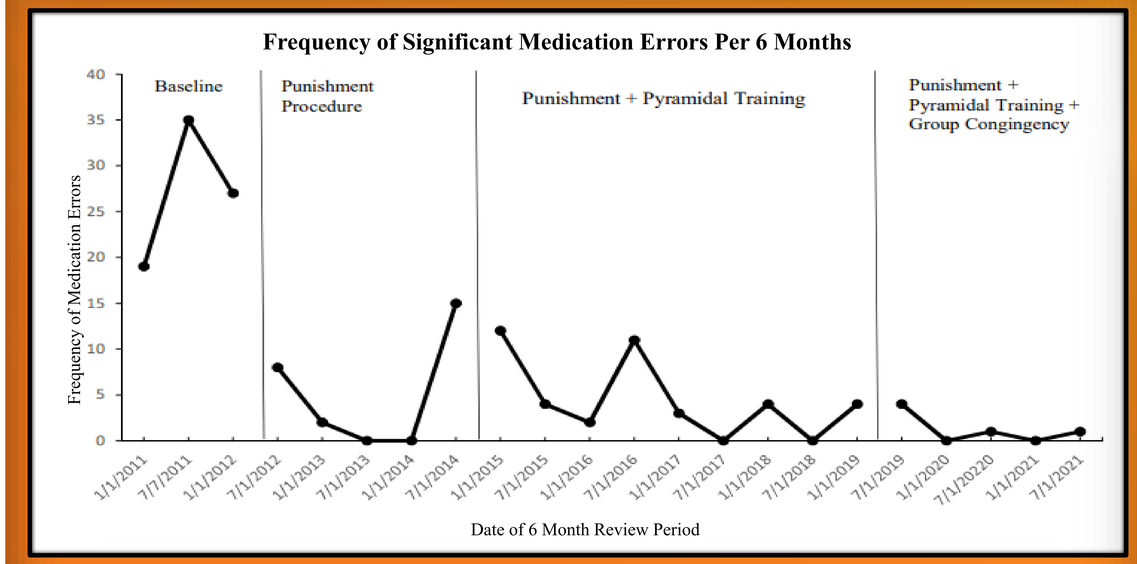
- Medication errors, a common issue in long-term care residential facilities, can lead to life-threatening harm (Pierson et al., 2007).
- This study builds on previous research in Organizational Behavior Management (OBM), which has demonstrated that interventions such as pyramidal training (Haberlin et al., 2012) and group contingencies (Allison et al., 1993) can significantly impact employee behavior change.

Methods

- This study was conducted at a community-based residential provider for adults with intellectual and developmental disabilities.
- Data collection occurred from 2011 through 2021 and was used to identify frequency of significant medication errors amongst doses administered to 176 residents by 550 direct support professionals, all of whom **are not licensed in a medical discipline.**
- During the last year of the study, July, 2020 through July, 2021—418,204 doses of medication were administered.
- Significant medication errors were defined as any instance in which an incorrect medication or dose was administered to the resident.
- Baseline data was gathered prior to the implementation of a formal intervention system for reducing significant medication errors.
- During the first intervention phase, a **positive punishment** procedure was implemented. This procedure involved a progressive, documented disciplinary process which included a verbal, written, and final warning followed by termination.
- In addition to the positive punishment procedure, the second intervention phase included a **pyramidal training system** (Haberlin et al., 2012).
  - Previously, medication training occurred in a classroom and was provided by one trainer for all staff who were responsible for administering medication.
  - The pyramidal system of training involved managers training and observing their supervisees administering doses within the environment that they would later be working in.
- The third intervention phase included components of the previous two intervention phases along with implementation of a small group contingency program (Allison et al., 1993).
  - **The Platinum Star Program** tasked each residential site with meeting clearly defined requirements each month, including 0 instances of significant medication errors.
  - If the residential site was successful with meeting requirements, staff and managers were eligible to receive a monetary bonus each quarter.

Results

- Following implementation of the positive punishment procedure, the frequency of significant medication errors per year was reduced with an average reduction of 81% compared to baseline.
- With the addition of a pyramidal system of training, the frequency of significant medication errors per year was reduced by an average of 28% when compared to the previous intervention phase and by 83.5% when compared to baseline.
- Following the addition of the final intervention component, the small group contingency program, the frequency of significant medication errors per year was reduced by an average of 72.97% when compared to the previous intervention phase and by **95.55% when compared to baseline**.
- **Accuracy of all medication error data was verified by an independent reviewer** during state licensing inspections.



Positive Punishment

- Frequency of medication errors **decreased** by 81% compared to baseline
- Decrease was immediate, but short-lived

Positive Punishment + Pyramidal Training

- Frequency of medication errors **decreased** by 28% compared to Phase B, and 83.5% when compared to baseline

Positive Punishment + Pyramidal Training + Group Contingency

- Frequency of medication errors **decreased** by 72.97% compared to Phase C, and **95.55%** when compared to baseline

Discussion

- Demonstrated that a multicomponent intervention system resulted in a significant reduction in frequency of medication errors per data review period.
- Limitations include that individual subjects changed significantly throughout the duration of the study given staff turnover. Also, this study does not examine the efficacy of pyramidal training or the small group-contingency program as standalone interventions.
- Future research, which may include a component analysis should be conducted to examine the efficacy of each intervention.

References

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