Improving the impact of pharmacy interventions in Hafar Albatin hospital

1. **Ali Saud H Alotaibi,** Pharmacy Technician, Hafar Albatin Central Hospital
2. **Mutlaq Tharwi Matar Alshammari,** Pharmacist, Hafar Albatin Central Hospital
3. **Shaalan Munis Al-Shammari,** Pharmacy Technician, Hafar Albatin Central Hospital
4. **Ahmed Eid Aqeel Alshammari,** Pharmacy Technician, Hafar Albatin Central Hospital
5. **Nuha Mana Aldhafeeri,** Pharmacy Technician
6. **Sultan Bandar B Almuraykhi,** Pharmacy Technician, Poison Control & Forensic Chemistry Centers

Abstract:

Pharmacy professionals play a crucial role in optimizing patient care and safety through clinical and pharmaceutical interventions. These interventions help rationalize prescriptions, improve therapeutic choices, and reduce medication errors and adverse effects. Recording pharmacy interventions (PIs) is essential for clinical governance and improving health outcomes.

community hospitals at Teaching Health Board aimed to increase recorded interventions from 0.4 per staff per week to 180 interventions in 20 weeks, involving all pharmacy staff. This quality improvement project utilized Plan-Do-Study-Act cycles and change management theory.

The successful implementation of the new Pharmacy Intervention Record Tool (xPIRT) toolkit significantly improved recording rates and staff engagement. The toolkit includes an online recording tool (xPIRT) and a dashboard with real-time intervention data. Motivating staff and providing tools for personal development and care improvement were key drivers of success. The xPIRT toolkit enhances PIs' representativity and significance, supports service planning, optimizes prescribing practices, and identifies training needs.

This adaptable toolkit can benefit other healthcare organizations, emphasizing quality improvement, IT integration, management strategies, and pharmacist roles in healthcare quality.

Keywords: Pharmacy interventions, Quality improvement, Healthcare management, Information technology, Pharmacists

Background:

Pharmacy professionals play a crucial role in optimizing patient care and safety by rationalizing prescriptions and preventing medication errors. Their interventions have been shown to reduce hospital stays, readmission rates, adverse drug reactions, promote better medication use, and discontinue inappropriate prescriptions. (Cardwell et al., 2020)

While the clinical impact of pharmacy interventions is well-established, more research is needed on their economic outcomes. Cost-consequence analyses have shown that pharmacy interventions lead to more cost-effective prescribing choices across various clinical conditions. Understanding the economic impact can inform policies and support increased funding for pharmacy services in healthcare settings. (Fosnight et al., 2020)

Various strategies, such as the All Wales Intervention Database (AWID) and the Pharmacists Achieve Results with Medications Documentation (PhARMD) template used , are available for recording pharmacy interventions and outcomes. These tools enhance documentation and analysis of the effectiveness of

pharmacy interventions in improving patient outcomes and healthcare system efficiency. (Van der Linden et al., 2020)

Baseline Measurement:
An initial baseline study was conducted on recorded interventions by the hospital pharmacy team (PT) using the All Wales Intervention Database (AWID). Data on date, number of interventions, and contributor identification were organized in a Microsoft Excel spreadsheet. The study recorded 158 interventions by two pharmacy professionals, resulting in a median of zero due to inconsistent data throughout the period.

Design:
The first author served as the project champion and implemented Plan-Do-Study-Act (PDSA) methodology and quality improvement strategies. The interventions recorded by the author were excluded from the project to reduce bias. Process measures included the number of interventions recorded and the staff involved, while outcome measures focused on new local guidelines for hospitals and staff awareness of recording pharmacy interventions (PIs). Balancing measures included assessing the time taken to record interventions to avoid significant impacts on existing pharmacy services, collected through Microsoft Forms.

Strategy
The project implemented two Plan-Do-Study-Act (PDSA) cycles over a 20-week period to improve pharmacy interventions (PIs) recording Teaching Health Board. Table 1 summarizes the changes made during each PDSA cycle.

To complement baseline data, stakeholders, including PT members, ward managers, and doctors, completed two surveys to assess satisfaction with current recording methods for PIs. The surveys showed agreement on the importance of PIs in improving patient care and service planning.

Stakeholder analysis prioritized PT members in the project. Baseline data showed a need for improved recording practices, with 75% of PT not recording interventions securely between October 2020 and October 2021.

Following baseline data collection, a PDSA methodology was implemented. Cycle 1 involved introducing the new Pharmacy Intervention Record Tool (xPIRT) via Microsoft Forms and motivational reminders for PT. Feedback loops were established for continuous improvement.

Cycle 2 added features like the xPIRT Dashboard for real-time results and an editable xPIRT List for interventions. A driver diagram visualized necessary changes, and meetings addressed time constraints and accuracy concerns. Data collection using xPIRT continued for 10 weeks, followed by a final survey to assess project impact and stakeholder feedback.

Table 1. The study design and changes implemented in each PDSA cycle:

PDSA Cycle	Contributors for Inadequate Record of PI	Changes Implemented
PDSA 1 (10 weeks)	Existing tools (AWID) are not user-friendly.	Implemented a new Pharmacy Intervention Record Tool (xPIRT) via Microsoft Forms.
	MM leadership did not emphasize the importance of PI.	Sent weekly reminders and motivational emails to PT.
	Any small changes on xPIRT were addressed within 24 hours based on emailed feedback.	Ensured that xPIRT is user-friendly and takes less than 5 minutes per intervention.
PDSA 2 (10 weeks)	Intervention results were not easily accessible.	Implemented xPIRT Dashboard via Microsoft Power BI for real-time updates, accessible to all PT via Microsoft Teams.
	Intervention results were not editable.	Created a sharable file (xPIRT List) via Microsoft Lists for editable results.

	Lack of awareness on the purpose/use of intervention data.	Conducted PT advisory meetings with the Head of Community Services/Pharmacy to educate about xPIRT usage, data interpretation, and its impact on local clinical governance and training needs.
	Time limitation for recording interventions.	Reassured PT staff that they only need to invest 3 minutes per week on xPIRT to meet project targets.

Results and Discussion

During the first PDSA cycle, there was a notable increase in the average number of interventions recorded per week (14.7 interventions), surpassing the project's target by 63.3%. The median number of interventions also improved to 12, indicating a clear progress from the baseline data. However, not all hospital pharmacy team (PT) members utilized the new xPIRT tool; only 6 out of 8 did so. Despite this, the cycle demonstrated a positive impact on the completion of interventions. (Suzuki et al., 2020)

In the second PDSA cycle, the average number of recorded interventions continued to increase (14.8 interventions per week), exceeding the target by 63.9%. The median number of interventions remained at 12, showing sustained improvement from the baseline and similar to PDSA cycle 1. The total interventions recorded reached 254, surpassing the target by 41.4% and achieving the project's aims 7 weeks before its end. (Zhao et al., 2022)

The Act-IP website, which records interventions by French hospital pharmacists, has been operational since 2006, highlighting the longstanding need for effective tools to document pharmacy interventions (PIs) in hospitals. Our project addressed this need by creating the xPIRT Toolkit, integrating a user-friendly tool that captures clinical data with indicators of economic and organizational impact. This initiative was driven by a 'systems thinking' approach, considering various elements like people, tasks, technology, environment, and organizational structures. (Presley et al., 2019)

The project emphasized clear communication and knowledge dissemination among stakeholders with decision-making power, contributing to improved clinical practice and service enhancements. Active engagement strategies, including infographics, workshops, emails, and talks, were employed to convey the importance of recording PIs, leading to increased awareness and acceptance among PT members. (Ylä-Rautio et al., 2020)

Multiple perspectives from stakeholders were considered, incorporating feedback through surveys and engagement activities. The project prioritized PT work conditions, ensuring that recording interventions remained manageable within their workload. The average time to complete an intervention slightly decreased from cycle 1 to cycle 2, indicating ongoing efforts to optimize efficiency. (Christopher et al., 2021)

The project also focused on motivation for change, using tools like the xPIRT Dashboard to provide real-time data and motivate PT members to record interventions. The dashboard's features, such as cost-avoidance projections and error severity analysis, empowered the team and fostered a culture of continuous quality improvement. (Steed et al., 2019)

Overall, PT satisfaction with the project significantly improved, demonstrating the effectiveness of the xPIRT Toolkit in enhancing pharmacy practice. The tool's adaptability and integration with Microsoft Apps make it a valuable asset for medicines' safety procedures in various healthcare settings. (Mi et al., 2020)

Moving forward, xPIRT and its Dashboard are expected to play a crucial role in advising on prescribing practices, formulary changes, and clinical guidelines, thereby improving clinical governance. The data generated can inform training opportunities, facilitate stakeholder collaboration, and advocate for evidence-based policies and practices in pharmacy settings. Additionally, the tool promotes professional development by facilitating knowledge sharing and learning from interventions across different wards and settings. (Vo et al., 2021)

Limitations

An important limitation of this project was the significant variability within the pharmacy team (PT), including differences in staffing numbers, profiles, days of ward cover, and IT skill levels. This variability made it challenging to accurately assess improvements across the team.

Recording interventions using the xPIRT tool could potentially draw PT staff's attention away from patient care. Although this concern was addressed during the project, the actual impact on patient care remains to be fully understood. So far, there have been no significant disruptions reported.

The project focused specifically on PT work in community hospitals and has not been extended to primary care or district general hospitals. Additionally, the reliance on Office 365 and Microsoft Power BI Premium licensing for the xPIRT Toolkit may limit its adoption by some PTs.

While xPIRT can identify cost-saving opportunities, the accuracy of cost-saving figures generated using the ScHAAR model may need updating.

The project did not directly assess the impact of pharmacy interventions (PIs) on patient care and safety, such as reductions in medication errors or improvements in prescription optimization. While xPIRT can identify safety risks and unsafe care, it does not estimate harm, disability, or death due to adverse events in inpatients.

The long-term success of this project depends on sustained engagement and usage of the xPIRT tool. Monitoring satisfaction levels, recording numbers, and digital tool outcomes after full implementation will be crucial for assessing prolonged impact and effectiveness. However, the initial results suggest that xPIRT has the potential to replace AWID successfully, increase stakeholder motivation for reporting, improve clinical governance, and enhance prescribing practices.

Conclusions

At the start of PDSA cycle 1, the recording of pharmacy interventions (PIs) lacked representativeness and significance, with low motivation and understanding among the team regarding the importance of recording this data.

The results demonstrate that an effective recording tool tailored to the organization's needs is essential for increasing documented PIs. The xPIRT Dashboard provided an automatically updated visual platform that organized data into infographics, facilitating personal continuing professional development (CPD), demonstrating activity and impact, supporting service planning, informing clinical governance meetings, and identifying education/training needs.

While concerns about potential distractions from patient care were noted, the actual impact remains to be evaluated in future work. The long-term success of the project, beyond PDSA cycle 2, will be monitored to assess any additional workload associated with using the xPIRT Toolkit.

Overall, the xPIRT Toolkit has the potential to be applied and adapted across various healthcare settings, contributing positively to patient safety and quality of care.

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