AIMS Assurance and Improvement in Medication Safety

A PATIENT SAFETY AND QUALITY IMPROVEMENT PROGRAM OF THE ONTARIO COLLEGE OF PHARMACISTS

ASSESSMENT OF THE ASSURANCE AND IMPROVEMENT IN MEDICATION SAFETY (AIMS) PROGRAM

SUMMARY OF KEY FINDINGS RELATED TO PROGRAM UPTAKE AND SUSTAINED USE IN COMMUNITY PHARMACIES

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INTRODUCTION

Assurance and Improvement in Medication Safety (AIMS) is a community pharmacy continuous quality improvement (CQI) program developed by the Ontario College of Pharmacists in consultation with various pharmacy stakeholders. AIMS encourages an open dialogue on medication incidents/near misses, and provides the support needed to identify the root causes of errors and implement appropriate system-based changes. Medication incidents and near misses are defined by the Ontario College of Pharmacists[1] and this summary report as:

> A **Medication Incident** is a preventable occurrence or circumstance that may cause or lead to inappropriate medication use or patient harm. Medication incidents may be related to professional practice, drug products, procedures, and systems, and include prescribing, order communication, product labelling/packaging/nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use.
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> A **Near-Miss Event** is an event or circumstance that took place and could have resulted in an unintended or undesired outcome(s) but was discovered before reaching the patient.

AIMS adopts many similar components as other community pharmacy CQI programs currently in use in Canada. Specifically, the core elements of AIMS include the online reporting of medication incidents/near misses to the Pharmapod platform, regular meetings/communication to discuss medication incidents/near misses and plan changes, and analysis and discussion of significant or common medication incidents that have occurred elsewhere. To explore issues surrounding AIMS uptake, value, and challenges, the Ontario College of Pharmacists in February 2018 initiated a pilot of AIMS. This pilot involved the use of AIMS by 100 community pharmacies for a period of nine months. Results of the pilot study identified opportunities for improvement related to structured assessments of process quality, revised AIMS governance, enhanced stakeholder engagement, and increased community pharmacy uptake and sustainability. This report summarizes the key findings and recommendations related to AIMS uptake and sustainability in community pharmacies.

[1] Based on definitions developed or listed by ISMP Canada. https://www.ismp-canada.org/definitions.htm, accessed November 12, 2018.

RESEARCH METHODS

As part of the AIMS assessment, other community pharmacy CQI programs were examined, the current literature on medication incident reporting was reviewed, and a survey of designated managers and staff from AIMS pilot pharmacies was conducted. Ethics approval for the survey was obtained from the St. Francis Xavier University Research Ethics Board. This board reviewed the survey's research methods and protocols following the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.*[2] The questionnaire adopted for this assessment is based on an instrument that has been used to assess the performance of similar CQI programs, including SafetyNET-Rx (Nova Scotia), COMPASS (Saskatchewan), and Safety IQ (Manitoba). The questionnaire captures basic demographic details about the respondent, use of the various tools and techniques that form part of AIMS, how the safety culture of the pharmacy may have changed during the AIMS pilot, the benefits obtained from participating in the AIMS pilot, and the various challenges faced.

An online version of the questionnaire was distributed by email to 520 designated managers, pharmacists, and pharmacy technicians in early October 2018. A follow-up email was sent in mid-October 2018, and a final round of deployment occurred in mid-November 2018. A total of 80 usable questionnaires were returned[3], yielding a response rate of approximately 15.4% The quantitative data from the survey were analyzed using IBM SPSS Statistics 24. Basic statistics (e.g., mean and frequency counts) and paired samples tests (e.g., pre- and post-cultural changes) were used to analyze the quantitative data. The qualitative data (e.g., challenges and benefits of AIMS use) were analyzed using thematic analysis.

[2] Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/Default/, Accessed November 13, 2018

[3] Three questionnaires were excluded from further analyses. One was not included as the respondent was not practicing in a community pharmacy at the time of survey deployment. Two were not included as their pharmacy was not using AIMS at the time of survey deployment (i.e., pharmacy not part of the pilot).

DATA SUMMARY

Of the 80 respondents, 15 (18.8%) are pharmacy owners, 18 (22.5%) are designated managers, 30 (37.5%) are staff pharmacists, 4 (5.0%) are relief pharmacists, 11 (13.8%) are pharmacy technicians, and 2 (2.5%) are pharmacy assistants. In addition, 48 (60.0%) respondents are female, 30 (37.5%) are male, and 2 (2.5%) chose not to answer. Respondents have an average of 9.3 years of experience in their current pharmacy, with an average of 17.9 years spent in community pharmacy practice. A total of 38 (47.5%) respondents work in an independent pharmacy, 13 (16.3%) work in a franchise pharmacy, and 29 (36.3%) work in a chain pharmacy. Respondents reported that an average of 3.7 staff pharmacists and 1.48 pharmacy technicians work in their pharmacy. The average reported weekly script count is 2,722.

Use of the Pharmapod platform ranged. In terms of reporting medication incidents/near misses, 48 (60.0%) respondents did not record any medication incidents/near misses to Pharmapod in the past week,[4] 31 (50.0%) respondents did not record any medication incidents/near misses in the past month, while 28 (35.0%) did not record any medication incidents/near misses since the start of the AIMS pilot. A total of 15 (18.8%) respondents recorded at least one medication incident/near miss in the past week, 31 (38.8%) recorded at least one medication incident/near miss in the past month, and 45 (56.3%) recorded at least one medication incident/near miss since the start of the AIMS pilot. The remaining respondents chose not to answer the questions related to their extent of reporting. With regards to meeting to discuss medication incidents/near misses and plan subsequent improvements, 28 (35.0%) of respondents highlighted that no such meetings occurred in their pharmacy, 20 (25.0%) indicated that one meeting took place, and 31 (38.8%) stated that more than one meeting occurred. One (1.3%) respondent chose not to answer the question. When such meetings did take place, the majority of respondents (i.e., 48 of the 49 that attended at least one meeting) felt comfortable talking about medication incidents/near misses.

A variety of questions were presented to survey participants to identify any fear or confusion with recording and discussing medication incidents/near misses. Results of the data analysis indicate that low to moderate levels of fear exists with recording and discussing medication incidents/near

[4] All times are based on when the respondent completed the online survey.

misses, low confusion and disagreement with the definitions of medication incidents and near misses, and moderate to high views that recording and feedback from medication incidents/near misses are beneficial. However, moderate to high levels also exist with the extra work and time involved in recording medication incidents/near misses.

The data also highlights various benefits of AIMS. Key themes identified in the qualitative data include increased caution and awareness of individual actions, improved understanding of the root causes of medication incidents/near misses, increased openness with medication incident/near miss discussions, and perceived reduction in the number of medication incidents that occur. Statistically significant improvements occurred with the comfort levels of reporting. Specifically, there were increases in the views that when medication incidents / near misses are reported, it is the problem that is being reported and not the person; and that staff feel that medication incidents/near misses are not held against them. Statistically significant improvements related to medication incident / near miss communication and learning also occurred. Increases occurred in the views that medication incident / near miss discussions aim to learn from mistakes and communicate the findings widely; and following a medication incident, there is a real commitment to change throughout the pharmacy.

Despite these benefits and cultural changes, various challenges of using AIMS were highlighted by respondents. Key challenges identified relate to the additional time needed to record medication incidents/near misses, and the lack of clarity with regards to near miss recording. Respondents identified a variety of activities that the designated manager, corporate head office (where applicable), or the Ontario College of Pharmacists could do to further support AIMS. These activities focused around enhancing AIMS awareness and education and promoting open and blame-free discussions of medication incidents / near misses.

SUMMARY OF KEY RECOMMENDATIONS

The AIMS pilot has resulted in various enhancements to medication incident/near miss reporting and learning in participating community pharmacies. The research literature highlights that early (i.e., after one year of use) changes obtained from implementing standardized CQI programs in community pharmacies include:[5] (1) perceived reduction in the number of medication incidents that are occurring in the pharmacy; (2) increased awareness/confidence of individual actions related to dispensing; (3) increased understanding of the dispensing and related processes/workflow; (4) increased openness to talking about medication incidents among pharmacy staff; and (5) quality and safety becoming more entrenched in the workflow (e.g., staff are more aware of their roles and responsibilities in patient safety and confident that the dispensing processes are safe and reliable). Apart from the fifth change, evidence of similar changes is found in the data, despite the short pilot time period. Based on the findings from the pilot, it is recommended that AIMS be deployed to all community pharmacies in Ontario.

- **Recommendation 1** - The Ontario College of Pharmacists deploy AIMS to all community pharmacies in Ontario.

Results of the pilot study indicate that AIMS is already a well-designed CQI program. However, a number of opportunities exist to enhance AIMS uptake and sustainability. Key recommendations to improve the uptake and sustained use of AIMS based on the results of the pilot study, review of the research literature, and comparison to similar CQI programs in Canada include:

- **Recommendation 2** - The Ontario College of Pharmacists develop a detailed visual tool/aid that will allow pharmacy staff to quickly decide if a near miss should be recorded.

- **Recommendation 3** - The Ontario College of Pharmacists develop and market the AIMS Learning Portal. This learning portal will serve as the main source for detailed information on the AIMS program.

- **Recommendation 4** - The Ontario College of Pharmacists work with Pharmapod to develop a suite of AIMS cases of varying outcomes and process complexity.

[5] Boyle TA, Bishop AC, Duggan K, et al. Keeping the "continuous" in continuous quality improvement: exploring perceived outcomes of CQI program use in community pharmacy. Res Social Adm Pharm. 2014 Jan-Feb;10(1):45-57.

- **Recommendation 5** - The Ontario College of Pharmacists encourage a group of AIMS users to develop and actively market an AIMS community forum.

- **Recommendation 6** - The Ontario College of Pharmacists facilitate an initial dialogue between Pharmapod and corporate chains on how to better streamline the medication incident recording process, while ensuring that data anonymity, confidentiality, and security are maintained.

- **Recommendation 7** - Pharmapod and the Ontario College of Pharmacists update training material to increase awareness of the functionality that allows for shared contributions when recording medication incidents / near misses.

- **Recommendation 8 -** The Ontario College of Pharmacists review all AIMS documentation with the goal of emphasizing the role of the pharmacy assistant in the AIMS program.

- **Recommendation 9 -** The Ontario College of Pharmacists develop a training case focused on the role of the pharmacy assistant in the entire AIMS process.

CONCLUSION

Assurance and Improvement in Medication Safety (AIMS) is a CQI program that encourages an open dialogue on medication incidents/near misses, and provides the support needed to identify the root causes of errors and implement process related changes. To better understand AIMS uptake, value, and challenges, a pilot study involving the use of AIMS by 100 community pharmacies occurred in 2018. Results of the pilot study, along with comparisons to similar CQI programs and a review of the research literature, identified areas for program improvement. Broad areas for improvement relate to structured assessments of process quality, revised AIMS governance, enhanced stakeholder engagement, and increased community pharmacy uptake and sustainability. This report summarizes the key findings and recommendations related to AIMS uptake and long-term sustainability in community pharmacies.

ABOUT THE AUTHOR

Dr. Todd A. Boyle is a Full Professor of Operations Management at the Gerald Schwartz School of Business, St. Francis Xavier University. Dr. Boyle's primary teaching areas include operations management, enterprise systems, information systems, and business research methods. His research is focused on quality improvement in community pharmacies. From 2007-2017, Dr. Boyle held the Canada Research Chair (CRC) in Quality Assurance in Community Pharmacy and was team lead of SafetyNET-Rx; a research and outreach program focused on deploying continuous quality improvement to enhance medication incident reporting and learning in community pharmacies. Post-CRC, Dr. Boyle's primary focus is assisting pharmacy regulatory authorities with deploying and assessing continuous quality improvement standards across their jurisdiction.

Dr. Boyle has over 80 publications, including journal articles, book chapters, posters, conference papers, abstracts, and edited proceedings. He has received over two million dollars in funding awards spanning a wide variety of federal and provincial agencies, including the Social Sciences and Humanities Research Council of Canada, Canada Research Chairs Program, Canadian Institutes of Health Research, Canada Foundation for Innovation, and Nova Scotia Health Research Foundation (NSHRF). Dr. Boyle has also received awards from Innovacorp and Springboard to commercialize products developed by his research program. Dr. Boyle has served as Chair and Vice-Chair of the Nova Scotia Health Research Foundation Health Policy, Services and Outcomes Review Committee, and as a scientific review panel member for various tri-council and provincial funding agencies. Dr. Boyle holds a Ph.D. in Operations Management from Carleton University and has completed executive training at the University of Manitoba's Centre for Higher Education Research and Development.