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The Pharmacy
Guild of Australia

Documenting clinical intervention in community pharmacy: PROMISe III

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EXECUTIVE SUMMARY

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The Pharmacy Guild of Australia manages the Fourth Community Pharmacy Agreement Research & Development which supports research and development in the area of pharmacy practice. The funded projects are undertaken by independent researchers and therefore, the views, hypotheses and subsequent findings of the research are not necessarily those of the Pharmacy Guild.

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Pharmacies and Pharmacists

The team would also like to thank all the pharmacies and pharmacists that participated in this project.

A drug-related problem (DRP) can be considered an all encompassing description for a situation where the desired outcome of drug therapy is actually or potentially interfered with. This can be broadly applied to medication errors, adverse events (including drug interactions) or adherence issues. DRPs are a major burden on the Australian healthcare system, with many such problems resulting in admissions to hospital each year.

A significant proportion of DRPs are avoidable and originate in the community, where community pharmacists detect and resolve DRPs during the course of their daily activities. For the purposes of this project, the detection, recommendation and resolution process surrounding a DRP is termed a clinical intervention. There is a wide range of reported frequencies of clinical interventions within community pharmacies from studies both in Australia and overseas, varying from 0.09% (approximately 1 intervention every 1000 prescriptions) to over 2.5% (approximately one intervention every 40 prescriptions).¹⁻²⁹

At present, the documentation of clinical interventions is not a routine part of Australian pharmacy practice and one of the barriers to recording interventions within Australian pharmacies is the lack of a consistent documentation system within the pharmacy's dispensing software systems.

Aim

The PROMISE (**P**harmacy **R**ecording of **M**edication Incidents and **S**ervices electronic documentation system) project was commissioned by the Pharmacy Guild of Australia to establish the viability of, and requirements for, national implementation of an electronic documentation system for the recording of clinical interventions in Australian community pharmacy practice.

Methods

The project team developed a clinical intervention documentation system (PROMISE) that was integrated into two of the major dispensing systems available in Australia (FRED[®] and Simple Retail's Aquarius[®]). The system included a process for sending information relating to the intervention activity in each pharmacy to a secure repository and receiving information back to the pharmacy computer that provided feedback on the individual pharmacy's intervention activity compared to State and National peers.

A total of 185 pharmacies had the PROMISE software installed, across the states of Tasmania (15), Victoria (100), and New South Wales (70). The majority of pharmacists working in these pharmacies enrolled in the trial and documented the interventions they performed (531 pharmacists enrolled; mean of 2.9 pharmacists/pharmacy). Participating pharmacists were not given additional incentives to document their clinical interventions, but pharmacies were reimbursed \$1200 for participation.

Pharmacies were allocated to one of three groups, those with the basic PROMISE software (Group 1 = 40 pharmacies), those with the PROMISE software plus a general reminder to document interventions (Group 2 = 73 pharmacies), and those with the PROMISE software and both the general reminder and an electronic prompt that triggered performance of a specific intervention (Group 3 = 73 pharmacies). To determine which types of interventions tended to be documented, as well as the proportion of documented versus undocumented (actual) interventions, observers were also placed in a subset of 38 pharmacies for one week during the 12-week trial period. An additional 24 pharmacies that did not have the PROMISE software installed were also observed for one week, in order to gather information regarding the actual rate of performing interventions and types of interventions in pharmacies without the software. The actual intervention rates within the no software group were compared to the actual intervention rates in PROMISE pharmacies to determine the effect of the documentation system on the actual performance of interventions.

The documentation system was developed in the earlier PROMISE I and II trials, and refined further for this project, based on user feedback and analysis of the previous results. The system allowed the documenting pharmacist to categorise each intervention into one of several types of DRP, to provide details of recommendations to resolve the situation, and to indicate their opinion of the clinical significance of the intervention. In addition, the pharmacist could enter descriptive information regarding the intervention into a free-text box, and the estimated time it took to perform the intervention. Information from the dispensing software was automatically collected, including details of the prescription involved in the intervention, patient demographics (including age range and gender where known), the date and time of the intervention, and a pharmacist and pharmacy identifier. Information was de-identified and sent securely to the central repository. Participating pharmacists, pharmacy owners and consumers were also asked to complete a range of surveys and participate in interviews and focus groups. These activities provided extensive information regarding aspects such as preferred remuneration models; workload; consumer satisfaction; pharmacists' empathy, professionalism and clinical knowledge; and the pharmacy business environment.

Information was collated into datasets of interventions, pharmacy weeks of activity, and individual pharmacy activity over the duration of the trial. A range of statistical analyses was undertaken on these datasets to determine which factors were significantly related to the intervention frequency.

In order to determine the economic value of clinical interventions, a sample of 200 of the documented clinical interventions (comprising of 196 prescription-based interventions and 4 over-the-counter (OTC) interventions) were presented to an expert panel. Some 60 different “consequences”, or health conditions were determined by the research team as possibly being impacted upon by pharmacist interventions. Information from the available literature and the health sector, as well as supplementary information from additional expert panels, was used to determine the annual health utilisation associated with each consequence (in terms of quality of life, medical visits required, hospitalisations and medical investigations). Twenty-three independent experts (5 specialists, 10 general practitioners and 8 pharmacists) were recruited and provided their estimates of the probability of any given clinical consequence occurring with and without the intervention.

By cross-referencing the probability estimates from the expert panel with the cost estimates from the clinical consequences table, it was possible to determine a value and range for the estimated healthcare costs avoided for each expert’s opinion of each assessed intervention. Additionally, the change in medication costs was estimated for each assessed intervention by calculating the annual change in medication use before and after the intervention (using Pharmaceutical Benefits Schedule costs).

An economic model was developed, which included uncertainty analysis for each set of expert opinion, based on the distribution of the opinions, and for the key cost-driving assumptions in the model. Using this model it was possible to ultimately determine what the value of an average clinical pharmacy intervention is, and to extrapolate this value to an Australian perspective under a set of current practice and PROMISE practice assumptions. Having performed this analysis, both the expected economic effect of the PROMISE program, and the incremental benefit that it provides over current practice could be calculated. These estimates were re-sampled using the Monte Carlo method, to account for the uncertainty in the model, using @RISK 5.5 for Excel, which provides a broad form of sensitivity analysis. The resultant findings were provided to Deloitte Australia for their own economic analysis, such that they could incorporate the benefit of the PROMISE into their preparation of a business case regarding the national implementation of the PROMISE program.

Key Findings

The PROMISE III trial intervention documentation system was very favourably received by the participating pharmacists, who documented 6,230 clinical interventions associated with 2,013,923 prescriptions at an overall average frequency of 0.31% or 3.1 interventions in 1000 prescriptions. Documented clinical intervention rates for individual pharmacies ranged from 0.00% to 2.34%, indicating that intervention frequencies could be improved in many pharmacies.

Of the 6,230 prescription interventions, 330 were triggered by the electronic decision support prompt in Group 3 of the trial. These interventions were considered separately in the data analysis.

Group 3 pharmacies had the highest documented clinical intervention frequency in Phase 1 and 2 of the study, even after removing the specifically prompted interventions (see Figure 1).

Indeed, ten of the twenty pharmacies with the highest intervention frequency (excluding the prompted interventions) were from Group 3 pharmacies with the specific prompt. This indicates that the presence of the prompt not only increased the frequency of interventions triggered by the prompt, but also increased the frequency of interventions overall. It was also determined, through analysis of the observed and documented intervention frequencies, that the actual intervention frequency (interventions performed, but not necessarily documented) in a PROMISE pharmacy (with prompts) would be 0.9%, compared to the rate of 0.5% in current practice.

The PROMISE III trial found that, in general, the pharmacy’s documented clinical intervention frequency was significantly affected by the workload in the pharmacy - where as the busyness of a pharmacy increased, the overall intervention rate of that pharmacy tended to decrease. This suggests that adequate staffing levels with appropriate workloads would increase the frequency of interventions performed and recorded within pharmacies.

The level of training regarding the PROMISE system significantly increased the pharmacist’s individual documented clinical intervention rate, with those pharmacists who completed both the face-to-face and online PROMISE training

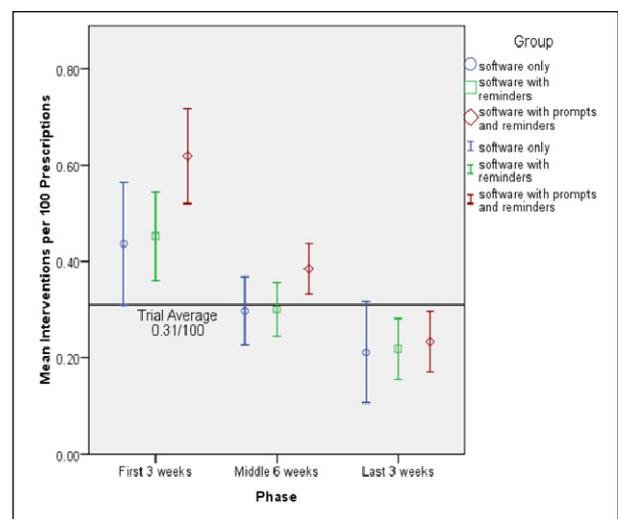


Figure 1: Intervention Frequency by Group

achieving a higher intervention rate than other pharmacists. A higher pre-existing clinical knowledge score also appeared to increase the intervention rate of the pharmacist, which may be due to these pharmacists having a higher DRP detection rate. The results suggest that by providing sufficient PROMISE training and additional clinical training, the intervention frequency of community pharmacists may be increased up to two-fold.

The average clinical intervention was estimated to avoid approximately \$360 in healthcare utilisation (including medication savings). Considering this alongside the estimated actual level of intervention frequency for current vs. PROMISE practice, it is anticipated that the average PROMISE pharmacy might save an additional \$1,476 in healthcare utilisation, and 0.04 quality adjusted life years *per week*. After considering the opportunity cost in terms of pharmacist time to find and perform interventions, this would translate to an incremental benefit of approximately \$290 million and 10,000 quality adjusted life years per year, if PROMISE were implemented nationwide.

Deloitte Australia developed a business case, and costed the implementation of a fully remunerated PROMISE program, assuming a 67% uptake rate by pharmacies. They estimated that the net benefit to the Australian Government, if a fully remunerated and supported PROMISE program was implemented according to their proposed case, would be over \$900 million over a 5-year period. A secondary, phased, implementation plan was also costed, whereby the program would be fully implemented, but only select interventions would be remunerated. The expected uptake rate of this program would be a less substantial 31%, but would still result in a benefit of almost \$430 million over 5 years.

Recommendations

The PROMISE project is the largest community pharmacy clinical intervention study ever conducted in Australia, and one of the largest in the world. The key recommendations flowing from the project are listed below.

1. Widespread Implementation

- The PROMISE III project tested the implementation of an innovative, cost effective method for optimising the outcomes of medications in a sample of 185 community pharmacies in Australia.
- There were no significant issues in the trial to indicate that there are major barriers to a national implementation.
- Therefore a *widespread implementation, available to all pharmacies, is recommended* which would require integrating the PROMISE software into all other dispensing systems used in Australia.
- To facilitate this implementation, and to offset the additional cost of finding, performing and documenting more interventions, a remuneration scheme should be introduced.
- A key component of the implementation is the use of data and case scenarios from the central repository for the ongoing continuing professional education of pharmacists; the central database could also inform and/or monitor a range of healthcare interventions.
 - For example, the data would provide a significant pharmacovigilance program for medication use around Australia.

2. Integration of Prompts to Increase Intervention Frequency

- The PROMISE III project showed that a specific intervention prompt significantly increased the number of documented clinical interventions performed by pharmacists.
- With a national roll-out, a *range of targeted intervention prompts could result in an increased intervention frequency in the participating pharmacies.*
- A different prompt should be put in place, each for a period of 8-12 weeks, allowing the performance of a series of high value clinical interventions.
- Prompts could be developed and targeted in two ways:
 - Target high value interventions (as determined from repository data) or those interventions of moderate value that occur more frequently.
 - Develop a program of decision support prompts in association with other prescribing advice activities such as those coordinated by the National Prescribing Service.

3. PROMISE Prospective Study

- The value of the documented clinical interventions performed in the PROMISE III project was estimated from the opinions of a number of medical and other experts.
- Although the variation of opinion has been minimised using a number of techniques, a *prospective trial utilising data produced by the implemented program would allow confirmation of the healthcare resource utilisation benefits.*
- Determination of the actual healthcare utilisation of patients with interventions in such a study would also allow for a more accurate evaluation of the cost effectiveness of the program.

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