



National Prescribing Service Limited

Improving the quality and safety of electronic drug interaction decision support in prescribing and dispensing software in Australia

Michelle Sweidan¹, James Reeve¹, Simone Rossi², Jean-Pierre Calabretto²

¹ National Prescribing Service Limited, ² Australian Medicines Handbook

Project Goal

The goal of this project is to enable electronic drug interaction decision support to be useful and clinically relevant, and to be applied consistently throughout Australia.

The National Prescribing Service (NPS) is working with Australian Medicines Handbook (AMH) to develop high quality electronic drug interaction data delivered via the Internet, which could potentially be used in any prescribing or dispensing software.



Background

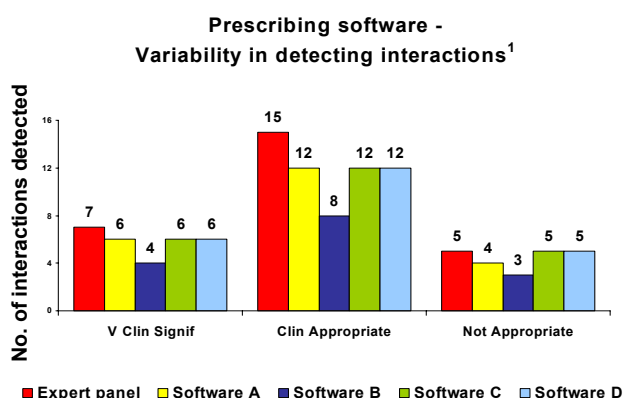
Doctors and pharmacists using prescribing or dispensing software receive warning messages when interacting drugs are prescribed for a patient. The software programs currently in use in Australia use a range of reference sources for this information, including *MIMS*, *APP Guide*, *Micromedex* or in-house databases. The warnings are displayed in different ways and offer varying types of information about severity and management.

Problems

Variability and quality of data

There is variability in drug interaction decision support in software programs, which may be undesirable and impede QUM. There are differences in the detection of drug interactions (see Graph), the content (see Box 1) and the presentation of the information. This is primarily due to the underlying reference source used, but also exists between systems using the same reference source.¹

A study amongst GPs in Australia in 2003 showed that they have concerns regarding the comprehensiveness, accuracy and evidence base of drug interaction data in software.²



'Desensitisation' to warnings

Users have commented that many of the drug interaction warnings are unhelpful or annoying, resulting in a tendency to ignore the 'pop-up' messages.² Desensitisation to alerts and warnings has been reported among both doctors and pharmacists, with the risk that potentially serious interactions will be overlooked.^{3,4}

Project to date

NPS is investigating the feasibility of offering targeted drug interaction information for use in prescribing and dispensing systems via the Internet as a Web service. The reference source used should provide accurate, succinct and clinically useful information.

An expert panel has been assembled and a scoping study is underway. A sample list of interactions identified by the panel (both serious/clinically significant and theoretical/minor interactions) will be compared in various reference sources including the AMH, and in the commonly used prescribing and dispensing programs in Australia. The detection, content and presentation of interaction information will be examined. These results will be used to inform the future direction of the project.

AMH drug interactions

The AMH attempts to provide useful, pertinent drug interaction information to help make decisions in clinical practice in the Australian setting. The information is based on a review of literature considered relevant (as described in Box 2) and is regularly updated.

The AMH is not a drug interaction textbook, rather the information is presented in a way which encourages users to consider factors affecting patients in addition to the drugs being taken.

Draft text is reviewed by AMH editors and experts in drug interactions and the relevant specialty e.g. neurology. Interactions are deliberately not rated for severity or significance as this is often context dependent.

Box 1. Variation in recommendations*: amiodarone + warfarin interaction

| | |
|-------------------------------|---|
| AMH | Reduce warfarin dose by about one-quarter, monitor INR frequently and adjust dose further as necessary. |
| APPGuide | If possible the combination should be avoided. If AMIODARONE is commenced while a patient is taking WARFARIN the PT/INR should be monitored regularly remembering that the reduction (or increase) in anticoagulant action occurs gradually and progressively. The dosage of WARFARIN should be adjusted appropriately. |
| eMIMS DrugAlert | 1. Use combination with extreme caution 2. Decrease drug dosage 3. Monitor INR A reduction in warfarin dose of up to 45% may be required. One clinical trial shows that the interaction develops within two weeks of starting amiodarone, peaks at 7 weeks, and persists for weeks to months after discontinuing amiodarone. |
| Stockley's Interaction Alerts | Warfarin dose reductions of about 30 to 65% have been required. The interaction begins to develop within 2 weeks and may persist for 16 weeks after amiodarone is withdrawn. Monitor INR weekly for the first 4 weeks of concurrent use and for several weeks after amiodarone is withdrawn. |
| Prescribing Software 1 | Dosage reduction of WARFARIN should be considered if this combination is prescribed. |
| Prescribing Software 2 | Use combination with extreme caution. Decrease drug dosage. Monitor INR. |
| Dispensing Software 1 | Anticoagulant response should be monitored carefully. A decrease in the warfarin dose by 1/3 to 1/2 may be necessary. The onset of this interaction is delayed in some patients and close monitoring should be continued for a month or two following the initiation or discontinuation of amiodarone. |

* Recommendation for management extracted from reference source.

Box 2. Process for reviewing drug interaction information for AMH

The list of interactions is checked against 3 interaction texts or databases: *Micromedex*, *Stockley* (print editions and online version) and *Drug Interaction Facts* (online version). Product information is also consulted (and is sometimes the only source). Where necessary literature searches are conducted. New additions to the list are made after scanning the literature and considering the above texts.

An interaction may *not* be included if:

- it is an additive or antagonistic pharmacological effect (often there is an introductory paragraph under the class or drug heading discussing this)
- evidence appears insufficient
- it is theoretical
- a drug is not included in the AMH
- no change in practice is needed (either clinically insignificant or usual practice and monitoring are adequate management).

References

1. Sharma N, Kerr SJ, Whicker SD. Quality of drug interaction decision support prompts in prescribing software packages for Australian general practice. ASCEPT Conference, Melbourne, 2002.
2. Ahearn MD, Kerr SJ. General practitioners' perceptions of the pharmaceutical decision-support tools in their prescribing software. *Med J Aust* 2003; 179:34-7.
3. Van der Sijs H, Aarts J, Vulto A, et al. Overriding of drug safety alerts in computerised physician order entry. *J Am Med Inform Assoc* 2006; 13:138-47.
4. Murphy JE, Forrey RA, Desiraju U. Community pharmacists' responses to drug-drug interaction alerts. *Am J Health-Syst Pharm* 2004; 61:1484-7.

An independent, non-profit organisation for Quality Use of Medicines, funded by the Australian Government Department of Health and Ageing.