

Clinical Pharmacy and Prevention of Adverse Drug Events

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The medical and pharmacy communities, as well as the general public, continue to be bombarded by publications on drug misadventures, drug adverse reactions and drug-induced problems. The extent of the problem is purportedly vast, always underestimated in its incidence and its costs stupendous if we review the conservative figures of the Arizona pharmacoeconomics people – more than the costs of the drugs themselves (and we know how much concern has been expressed about drug costs lately).^{1,2} It is useful to recall that a high percentage of "drug-induced problems" as defined in the pharmaceutical care literature³ manifest themselves as drug reactions or morbidity; others may be only the lack of optimal therapy, manifest by shorter life, lower quality of life or other.

The concerns are no doubt justified, but as much as we are alarmed by the extent and the costs of the issue, there seems to be less emphasis on their resolution. Indeed experts believe that the vast majority of these incidents are preventable.⁴ Retrospective studies would suggest that if someone had just intervened in the medication cycle at the appropriate moment, most of these adverse events could have been avoided. So why has society in general, and third party payers in particular, not insisted on putting some protection into the system? Is there a lack of evidence or has the evidence just not been politicized?

Some pharmacists, particularly those practising with the pharmaceutical care philosophy, have adopted the orientation of identifying patients' real or potential drug-related problems and resolving them. But what is the evidence that pharmacists can reduce these negative events? Let us review the literature on the topic.

Pharmacists and Drug Adverse Reactions

A quick review of some of the literature on pharmacists' influence on health outcomes reveals that they have reduced the incidence of adverse events and drug-related problems in a wide variety of diseases: cancer, mental disorders, anticoagulation therapy, geriatric patients (where DAR's are common), asthma, heart failure, ICU patients, general medicine, family medicine and more.⁵ In short, pharmacists *can* make a difference. The criticism is that these are mostly studies of contrived non-normal circumstances where an extra pharmacist is inserted into the cycle, that is, research conditions where outcomes are monitored. But what happens in real life?

A large study of hospital pharmacists in their normal monitoring duties showed significant influence on potential drug-related problems and that this impact increased as their patient-care involvement increased.⁶ A community pharmacist study has shown that pharmacists who use the pharmaceutical care approach have an intervention rate in the prescription cycle of about 4-8 times higher than the average for all pharmacists.⁷ Many of these interventions are designed to avoid drug-related problems. However it is apparent that pharmacists are far from their maximum potential. Using statistics extrapolated on a conservative basis from the Arizona figures, Canada's drug-related problems may be summated in the following chart. Based on what pharmacists could do (as evidenced in the contrived research studies), these figures could be reduced to:

Annual Costs of Drug-Related Problems Canadianized for 2000

	WITHOUT PHARM. CARE	WITH PHARMACEUTICAL CARE
Health Costs	10 billion \$	4.1 billion \$
Deaths	25,000	9,900
Hospitalizations	100,000	39,700

Conclusion

It is apparent that the evidence has not been politicized. The challenge rests before us and the evidence suggests that we need to work hard on finding ways to get pharmacists to the bedside and to the patient in the community (and away from other less valuable duties, in terms of health impact) in order to maximise the profession's ability. Pharmacy leaders, associations, health care leaders and third part payers are exhorted to permit this transition in the interest of our patients by providing the necessary incentives. The cost of the investment of the pharmacist time is self-paying by most studies.⁸ The automation and introduction of pharmacy technicians to take control of the distribution function will aid significantly – but pharmacists need to abandon old routines, adopt the pharmaceutical care philosophy, get knowledgeable about the therapeutics of their prescribers, specialize in one or more speciality areas, and get proactive in preventing drug-related problems. We need politicization of the issue and research studies of more reimbursement models to assure delivery of such services.

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References

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⁴ Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. Am J Hosp Pharm. 1990;47:533-543.

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⁸ Mutnick AH, Sterba KJ, Peroutka JA, Sloan NE, Beltz EA, Sorenson MK. Cost savings and avoidance from clinical interventions. Am J Health-Syst Pharm. 1997;54:392-6.