Canadian Society of Hospital Pharmacists
La Société canadienne des pharmaciens d’hôpitaux

“Prescription for the Future”
Brief to the Commission on the Future of Health Care in Canada

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CSHP Vision 2003
Setting the course, partnering with patients, striving for excellence!
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Executive Summary

While the debate continues on whether increased funding should be made available to improve and sustain our public system, it remains apparent that we must find ways to maximize the dollars we invest in health care. Drug therapy is one area in which much improvement is needed.

Drug therapy is an integral and increasingly important component of today’s health care system. In 2000, drug expenditures in Canada reached $14.7 billion, the second largest category of health expenditures next to hospital services. If managed appropriately, drug therapy can reduce the cost of illness, prevent the need for costly surgeries, and promote faster healing and shorter hospital stays. However an increasing volume of evidence indicates that there is considerable room for improving the safety and appropriateness of medication use. Non-compliance, inappropriate prescribing and use, and medication misadventures all contribute to sub-optimal use of drugs.

The long-term sustainability of Canada’s health care system requires significant improvements in medication use and avoidance of drug misadventures. We cannot continue with our current situation of inappropriate drug use – this is unacceptable from both a health and an economic perspective.

Within the hospital environment, pharmacists have demonstrated that effective use of their expertise results in improved health outcomes and reduced costs. However, to achieve significant gains throughout the entire system, an appropriate level of pharmaceutical care must be provided across the continuum of care. The considerable expertise and experience of hospital pharmacists, particularly in the areas of collaborative practice models and drug use management, can help achieve that level with substantial benefit to Canada’s health system.

To that end, CSHP offers the following recommendations:

1. Develop a national strategy to ensure patients have access to needed medications. Various options exist for the coverage of medications, including a totally public plan (ie. National Pharmacare program), comprehensive public-private plan, etc.

2. Develop a national strategy to ensure patients have access to pharmaceutical care across the continuum of care, including the necessary advice/guidance on how to properly use their medications as well as adequate monitoring and follow-up.

3. Develop a national approach to community-based care and home care services. Pharmacists should be directly involved in planning and implementing of related processes.

4. Investigate and fund new mechanisms (eg. secure computer health networks) to facilitate the confidential transfer of necessary patient information across care settings.

5. Develop public education/public awareness campaigns regarding the need to improve drug use, and the role that patients play in management of their disease.
6. Provide consistent and enhanced funding to facilitate increased involvement of pharmacists in direct patient care and drug use management roles, throughout the continuum of care.

7. Develop an integrated approach to health professional resource planning, to address current shortages and ensure adequate supplies in the future.

8. Realign the functions and responsibilities of health care professionals in order to capitalize on their expertise and training. Review and where appropriate, expand the scope of practice for health professionals. For pharmacists, the scope of practice could be expanded to include a collaborative role in prescribing. For pharmacy technicians, the scope of practice could be expanded to include more responsibility for technical aspects of pharmacy distribution services.

9. Provide funds to support the implementation of automated medication management systems in hospital pharmacies to enhance the safety and efficiency of drug distribution systems.

10. Provide funds for the establishment of electronic patient records, and electronic prescribing. All health disciplines must have the authority to access information from the electronic record so they can effectively fulfil their role on the health care team.

11. Develop community-based educational programs such as academic detailing to promote high quality and cost-effective drug use.

12. Set desired health outcomes and foster an environment in which all stakeholders share accountability for achieving these.

13. Sponsor outcomes based research to support evidence-based decision-making throughout our health care system.

14. Provide funds for the development of health information infrastructures to support the evaluation of services and programs, assess resource consumption, measure outcomes and facilitate more effective decision-making.

15. Develop broad-scaled Drug Use Evaluation (DUE) programs in hospitals and community settings to evaluate the appropriateness and cost-effectiveness of drug therapy.

16. Foster the creation of multidisciplinary teams throughout the spectrum of care, from primary to tertiary care. Pharmacists should be included on these teams to ensure drug therapy is optimal.
1. Introduction

The Canadian Society of Hospital Pharmacists (CSHP) is pleased to contribute to the work of the Commission on the Future of Health Care in Canada. Representing over 2000 pharmacists, CSHP is the national voluntary organization of pharmacists who share an interest in pharmacy practice in hospitals and related health care settings. CSHP members have a long-standing reputation for innovative leadership in advancing pharmacy practice, and in working collaboratively to improve patient outcomes and manage drug costs.

CSHP contributed to the Canadian Pharmacists Association’s (CPhA) submission to the Commission (October, 2001) and is supportive of it in principle. However, as hospital pharmacists have special expertise in collaborative drug therapy management and have significant experience in containing drug costs in hospitals and other health care facilities, we felt that the Commission would benefit from hearing more about the contribution that hospital pharmacists can make to our evolving health care system.

This brief will focus primarily on the issues and opportunities related to the drug therapy component of today’s health care system. While we acknowledge that there are many other facets to modern health care, drugs continue to account for an increasing share of Canada’s health dollar. Drugs are important in the management of health, yet evidence on problems associated with drug therapy continues to grow, so much so that it is becoming a major health and economic concern. It is our belief that improvements in medication use and avoidance of drug misadventures will contribute to the long-term sustainability of the health care system. The vast experience gained by hospital pharmacists, particularly in the areas of collaborative practice models and drug use management, can be of significant assistance in improving Canada’s health system.

2. Background

2.1 Who is CSHP?

Since its inception in 1947, The Canadian Society of Hospital Pharmacists (CSHP) has guided the advancement of hospital pharmacy practice. Through the development of practice standards and guidelines; provision of educational opportunities for improving clinical practice; and facilitating the sharing of new findings and best practices across its membership, CSHP continues to provide its members with the framework and skills to improve patient outcomes and manage drug costs. The education of students is a major interest of CSHP; members are continuously involved in the education of undergraduate students, hospital pharmacy residents, pharmacy technicians, as well as supporting mentoring and shadowing programs for students and new practitioners. CSHP also provides leadership and works in partnership with numerous other national and provincial health care associations to address and resolve issues related to safe and appropriate drug therapy, medication error prevention and reporting, and the provision of seamless care.
3. Our Current Environment

3.1 Drug Therapy in Today’s Health System: The Facts

Drugs continue to account for an increasing share of Canada’s health dollar. In 2000, drug expenditures reached $14.7 billion, representing 15.5% of total health care spending, the second largest category of health expenditures next to hospital services.\(^{(1)}\)

Drugs play a vital role in sustaining and improving the health of Canadians. The availability of highly effective medications for preventing and treating a broad range of health problems makes drug therapy an integral and increasingly important component of today’s health care system.

If managed appropriately, drug therapy can reduce the cost of illness, prevent the need for costly surgeries, and promote faster healing and shorter hospital stays. However an increasing volume of evidence indicates that there is considerable room for improving the safety and appropriateness of medication use. Non-compliance, inappropriate prescribing and use, and medication misadventures all contribute to sub-optimal use of drugs.

It has been estimated that each year, inappropriate use of medications is the cause of 10% of all hospital admissions, up to 25% of hospital admissions for the elderly, and over 20% of all nursing home admissions.\(^{(2-6)}\) In addition, studies have shown that 50% of Canadians do not take their prescription medications exactly as prescribed.\(^{(5)}\) The consequences of this non-compliance include delayed recovery and increased severity of illness, the need for additional treatments and diagnostic tests, additional visits to the physician and the emergency room, and an increased rate of hospital admissions. A conservative estimate of the costs of non-compliance to the Canadian health care system is in the range of $7 - $9 billion per year.\(^{(5)}\)

Since the 1999 publication of the US Institute of Medicine report, “To Err is Human: Building a Safer Health Care System”, North American health care facilities have been spurred into action to examine their systems to reduce medical error. The report states that between 44,000 to 98,000 people die in the US annually due to medical error. Medication errors alone contribute to 7000 deaths.\(^{(7)}\) While obviously, not all medication errors result in death, the consequences are often extreme: over half of medication errors result in preventable adverse drug events, of which 20% are life-threatening.\(^{(8,9)}\)

Medication errors also result in tremendous financial costs. On average, one adverse drug event adds $2000 to the costs of hospitalization.\(^{(10)}\) This translates to $2 billion per year for hospital costs alone;\(^{(11)}\) indirect costs such as loss of worker productivity, paid sick time, and malpractice costs are not included in this cost.

Unfortunately, Canadian statistics for medication errors are not readily available. Estimating the cost and impact of medication errors in Canada based solely on a proportion of the U.S. data may be inappropriate since there are many differences...
between the American and Canadian health care systems. Nevertheless, it is clear that medication errors are responsible for a significant number of preventable deaths and costs.

3.2 Hospital Pharmacists Make a Difference

There are approximately 4000 hospital pharmacists in Canada, practicing in over 500 healthcare facilities, including acute care hospitals, ambulatory clinics, and long term care settings. These pharmacists have at minimum, five years of university education devoted to the study of drugs and their use in improving and maintaining health. Many hospital pharmacists have also completed a hospital pharmacy residency program, an additional year of experiential training that focuses on application of therapeutic knowledge to clinical practice. As well, a growing number of pharmacists have also obtained a Doctorate in Pharmacy (Pharm D.) degree. The Doctor of Pharmacy program is a two-year postgraduate program providing advanced education and training in many aspects of pharmacy practice, including direct patient care. In addition to this formal training, hospital pharmacists continually upgrade their knowledge and skills through continuing education sessions as well as through ‘hands-on’ experience gained in their clinical practices.

Allied members of the health care team have increasingly recognized and utilized the knowledge and skills of hospital pharmacists. This has occurred for several reasons, including:

- The recognition that the traditional process of delivering health care to patients frequently results in drug therapy outcomes that are not as effective, appropriate, or safe as possible and desirable.

- The fiscal constraints that have faced hospitals for many years. The need to manage rising costs has led to ongoing pressures to make treatment of patients more economical while retaining a high quality of care. Increased reliance on the pharmacist’s expertise has been a natural consequence of rapidly escalating drug costs and the costs associated with drug-related morbidity and mortality.

- The progressive evolution towards a ‘collaborative culture’ in many hospital environments. This evolution has facilitated the development of multidisciplinary teams to provide the most appropriate patient care. Pharmacists play an integral role in these multidisciplinary teams.

- The hospital pharmacist’s ability to access a shared medical record. This has enabled them to contribute more effectively to patient care, since the amount and quality of any health professional’s contribution is determined by the information they have available to them.
Consequently, hospital pharmacists have led the way in exploring and establishing innovative practice models designed to improve the outcomes and cost-effectiveness of drug therapy. They have progressively moved away from the traditional distribution oriented, technical services, and more towards information-oriented, cognitive services focused on patient centered care. They have done this, in part, by appropriately delegating drug dispensing workload to suitably trained pharmacy technicians and assistants, while maintaining quality controls and supervision.

Working alongside physicians, nurses and other health care professionals, hospital pharmacists have demonstrated the significant contributions they can make to patient care, and progressively proven the value of their unique expertise. Involvement of the pharmacist in direct patient care programs has been shown to improve a patient’s knowledge of their disease, improve compliance, decrease duplicate therapies, and result in better management of, and decreased incidence of side effects and adverse events. These contributions result in better disease management for the patient, decreased drug-related problems, and a decreased need for health services.¹²⁻¹⁹

Hospital administrators have also become more reliant on the expertise of the hospital pharmacist in drug use management. The rapidly escalating cost of drug therapy and the need to manage these costs, as well as the consequences and costs of inappropriate drug use have naturally led administrators to seek out pharmacists to assist in the resolution of these issues. In addition to their impact on direct patient care, hospital pharmacists contribute to the cost-effective use of drugs through the management of formularies, establishment of drug policies and guidelines, and drug use evaluation programs. Cost-effective use of drugs in turn, contributes to more effective use of the hospital’s overall budget.

A drug formulary is a list of pharmaceutical products approved for use in a particular setting. It reflects the combined current clinical judgement of pharmacists and physicians who select the most appropriate drugs to treat specific conditions. Working with other health professionals on the Drug and Therapeutics Committee, hospital pharmacists apply clinical, therapeutic, financial and pharmacoeconomic information in the formulary management process. The intended benefits include more cost-effective prescribing, improved quality of care through better identification of the best treatments, and elimination of inefficient treatments or those with avoidable risks of adverse reactions.

Hospital pharmacists have been directly involved in developing Clinical Practice Guidelines (CPGs), both at the institutional level and on a much broader basis (e.g. provincial, national). CPGs are intended to reflect current medical opinion for the best treatment choices. Physicians and other health care professionals use these guidelines to guide decisions related to patient care. These policies and guidelines impact the effectiveness of patient care as well as cost and drug resistance issues.

Hospitals and health regions have successfully used Drug Use Evaluation (DUE) programs to evaluate the appropriateness of drug therapy within their institutions, and measure the cost-effectiveness of drug use. Within the DUE process, pharmacists
systematically evaluate drug usage against predetermined criteria. Pharmacists then initiate educational programs to ensure that medication usage within the institution/region improves. DUE programs have been shown to more than pay for themselves through the savings achieved.\textsuperscript{(20)}

Cost benefit analyses from studies conducted in health care facilities, have shown cost-benefit ratios from 1:6 to 1:25, suggesting that for every $1 spent on a pharmacist’s services, between $6 - $25 in hospital costs were saved or avoided.\textsuperscript{(16-21)}

Hospital pharmacists also play a pivotal role in the prevention and review of medication errors. “The paradox of medications, which can heal or cause great harm, demands that their properties be understood and that they be used safely.”\textsuperscript{(22)} To that end hospital pharmacists continue to be involved in a number of initiatives that review the medication system to reduce patient risk of medication error. They promote best practices which include using unit dose distribution in inpatient settings, computerized physician order entry, standardizing and simplifying prescribing and distribution processes, using error-preventative packaging, and instituting 24 hour pharmacy services. At the national level, CSHP has worked with Health Canada to initiate a health care coalition for the development of a national medication error prevention and reporting system.

A detailed overview of the many roles and responsibilities of hospital pharmacists is provided in Appendix I.

4. Planning for the Future

As a member of the Health Action Lobby (HEAL), CSHP is on record as supporting Canada’s publicly funded health system. While the debate continues on whether increased funding should be made available to improve and sustain our public system, it remains apparent that we must find ways to maximize the dollars we currently invest in health care. It is abundantly clear that we cannot continue with our current situation of inappropriate drug use – this is unacceptable from both a health perspective and an economic perspective. Therefore, any solution for the continued viability of Canada’s health system must include policies and processes that improve patient outcomes and the cost-effectiveness of drug therapy. Much more can be done to improve our use of medications and, as demonstrated in the hospital environment, pharmacists are uniquely qualified in this area. By working collaboratively with patients and other members of the health care team, pharmacists can make a difference in the health of patients, while positively impacting overall health care costs.

4.1. Maintaining Canadian Values of the Health Care System

CSHP supports the fundamental values of the Canadian health care system as outlined in the Canada Health Act. These include universal access to health care services, insured
coverage of “medically necessary” services for all Canadians, and the portability of this coverage between provinces.

Issues

1. Medication Coverage

Medications are an important modality in preventing and treating illness. Thus our health system must be structured to ensure that Canadians have access to required drug therapies when needed, whether they are being cared for in a hospital (where drugs are typically covered under our public system) or in a community setting (where drugs are often not covered under a public plan). Unfortunately, across Canada there are significant disparities in drug program coverage. A national approach to ‘pharmacare’ is needed, whereby all Canadians have access to medically necessary drugs regardless of their ability to pay. This recommendation does not presume that a comprehensive public program is the only viable option. Other alternatives such as the comprehensive public–private approach used in Quebec should also be considered.\(^{(23)}\)

2. Access to Necessary Pharmaceutical Care

In addition to obtaining the medications they need, Canadians must be able to obtain advice and guidance about their medications so that they become knowledgeable partners in their own care. Appropriate patient monitoring and follow-up must also occur to ensure that medication therapy is optimized. As the drug experts, pharmacists are best equipped to perform this role. The benefits of involving pharmacists in a greater capacity in direct patient care have been demonstrated in hospital and clinic settings.\(^{(12-21)}\) However this needs to occur on a much broader scale, throughout all health facilities, as well as in community practices, in order to see significant improvements for the entire population and health system. To ensure adequate pharmacist resources are available to support direct patient care, further drug distribution and dispensing tasks must be delegated to non-professional support staff (e.g. pharmacy technicians) and be supported further by automation.

3. Continuum of Care

As patients continue to be discharged from health facilities much more quickly than in the past, there is a need to ensure they have adequate supports available in the community. The shift to community based care can be very positive from the perspective of patient care – patients are able to convalesce or, in the case of palliative patients, to spend their final days, in much more comfortable and familiar surroundings. Effective community-based care can also contribute to decreased costs for the health care system by reducing utilization of and pressure on acute care beds, long-term beds, and palliative facilities.
In order to support this shift to more care in the community, our system requires a strong, universal approach to home care. Home care programs need to involve pharmacists so that drug related problems of home care patients are identified and prevented or resolved, and to advise home care staff and community physicians on medications. Nurses, the primary contact for the home care patient, acknowledge the difficulty in keeping current with the plethora of new drugs on the market and their ability to effectively deal with drug related problems. CSHP has identified this as a priority need, and is currently awaiting the recommendations of our Task Force on Guidelines for the Practice of Pharmacists in Home Health Care.

New strategies are also required to improve the transfer of relevant patient information between patient care providers. When patients move across care settings (eg. from home to hospital to home), the caregivers in the new care setting (eg. family physician, community pharmacist) often do not receive important patient-specific information necessary to their on-going care. In fact, it has been suggested that many drug-related problems identified post-discharge, may not be due to any fault of the patient, but rather as a result of errors or oversights by health care professionals who lack complete information to provide individualized care. One study reported that for approximately one third of patients, discrepancies existed in the documentation of discharge prescriptions and the discharge summary letters.\(^{(24)}\) In addition, many discharge letters failed to reach the family physician’s office. For over half of those discharge letters that did reach the family physician, it took longer than 32 days to arrive.

‘Seamless care’ has been defined as the desirable continuity of care delivered to a patient in the health system across the spectrum of caregivers and their environments. In the case of pharmacy services, pharmaceutical care should be carried out without interruption such that when one pharmacist ceases to be responsible for the patient’s care, another pharmacist or health care professional accepts responsibility for the patient’s care.\(^{(25)}\)

Hospital pharmacists have recognized that there are many barriers hampering the provision of seamless care to patients as they cross care settings. Consequently, in 1996, CSHP initiated work in this area by establishing a joint task force with the Canadian Pharmacists Association. To date, two workshops have been held, bringing together pharmacists from hospital and community practices to work collaboratively through the involved obstacles. While work continues in this area, some success has already been achieved from the hospital pharmacy perspective. In a recent hospital pharmacy survey, 32% of respondents had established a policy for the provision of seamless pharmaceutical care.\(^{(26)}\) Respondents indicated that for selected patients, hospital pharmacists were providing pertinent patient information (with patient permission) to community pharmacists, family physicians, home care providers or home care centres. The information provided included medications at discharge, medications discontinued during hospital stay, relevant drug monitoring parameters and lab values, and care plan information.
Recommendations

i. Develop a national strategy to ensure patients have access to needed medications. Various options exist for the coverage of medications, including a totally public plan (ie. National Pharmacare program), comprehensive public-private plan, etc.

ii. Develop a national strategy to ensure patients have access to pharmaceutical care across the continuum of care, including the necessary advice/guidance on how to properly use their medications as well as adequate monitoring and follow-up.

iii. Develop a national approach to community-based care and home care services. Pharmacists should be directly involved in planning and implementing of related processes.

iv. Investigate and fund new mechanisms (eg. secure computer health networks) to facilitate the confidential transfer of necessary patient information across care settings.

v. Develop public education/public awareness campaigns regarding the need to improve drug use, and the role that patients play in management of their disease.

4.2. Sustainability

The final report of the Saskatchewan Commission on Medicare noted “...a good system of prevention is the best way to reduce the cost of medicare while improving the health of Saskatchewan citizens over the long term...” (27) This sound philosophy could also be well applied to the use of medications within our health system. A proactive approach is required to prevent and resolve potential drug related problems before they require treatment within the health care system. The cost of inappropriate drug use in Canada is significant from economic and patient health perspectives; much can be done to prevent this.

Issues

1. Need For Improved Drug Use Management

Improving drug therapy and patient outcomes will contribute to the sustainability of the health system - avoidance of drug misadventures, and improving patient outcomes results in reduced morbidity and mortality, fewer visits to physicians, fewer admissions to hospitals, and decreased drug costs. (12-21) Based on the increasing amount of evidence regarding problems with drug therapy, it is clear that other health professionals, administrators, and governments need help in drug use management. As demonstrated through numerous studies and a vast amount of experience in hospital settings, pharmacists help considerably in this regard. A
recent example of this is the study published in the Journal of American Medical Association, which showed that pharmacist involvement in prescribing in the Intensive Care Unit resulted in a 66% reduction in adverse drug events when compared to the baseline or the control group.\textsuperscript{15} However, to achieve significant gains throughout the entire system, an appropriate level of pharmaceutical care must be provided across the continuum of care. Funding for pharmacy services needs to be consistent so that valuable, proven and cost-effective programs are not cut due to lack of resources.

2. Shortage of Health Care Professionals

The availability of qualified health care professionals has become a major concern for hospitals and the health care system. Issues related to recruitment and retention of pharmacy personnel are as significant as those reported by other health disciplines. Pharmacist position vacancies in the year 1999/2000 were reported by 69% of respondents to a national survey on hospital pharmacy.\textsuperscript{26} Over half of the respondents (54%) indicated they had to curtail service due to an inability to recruit or retain staff. Direct patient care services were withdrawn by 71% of respondents that had to curtail services. Implementation of approved services was delayed by 61%, teaching commitments reduced by 51%, hours of services reduced by 31%, and distribution services withdrawn by 8%.

An integrated approach to human resource planning is required to ensure sustainable levels of health professionals. All stakeholders, including health professional organizations and governments, must work together creatively to address the shortages and plan for the future. Enrolments in training programs and rising tuition costs need to be examined, with a view to training sufficient personnel for future needs. New strategies to address staff morale and the workplace environment are required for both recruitment of new professionals and retention of current health care workers. Suggested strategies include financial incentives, manageable workloads, and enhanced professional practice opportunities.

CSHP is currently a member of the Steering Committee of Human Resources Development Canada (HRDC), which is investigating the pharmacy manpower shortage. This group will not only identify the factors contributing to the shortage but will also develop strategies to help resolve the issue.

3. Inflexible Roles And Structures

The current restricted ‘points of entry’ to the system, as well as restrictions on scope of practice hamper the efficiency and effectiveness of our health system. Physicians have traditionally been the gatekeepers of health services, but it may be more appropriate to review the patient’s health care needs and determine whether alternative health care professionals may be able to provide that care. Having physicians continue to do tasks that can effectively be done by other health care professionals is an expensive and inefficient use of scarce financial and human
resources. A realignment of functions and responsibilities amongst medical and other health professionals should be considered in order to best capitalize on the expertise and training of all health care professionals; the most appropriate resource needs to be employed for any given task at any given point.

Pharmacists in hospital settings have demonstrated that they can work collaboratively with physicians, nurses and other health care professionals. They have also shown they are very capable of assuming additional responsibilities, such as an increased role in prescribing drug therapies and monitoring of patients. Collaborative practice models can result in lower overall costs and also help to reduce the workload and shortage issues related to physicians, nurses and other health disciplines. As an example, there is extensive evidence in Canada and the U.S. that pharmacist-managed anticoagulant programs result in decreased costs and improved patient outcomes.\(^{28-33}\) A paper recently completed by CSHP reviews the current extent of prescribing by pharmacists in Canadian facilities, and provides options for expanding the role of the pharmacist in this area.\(^{34}\) For example, a potential collaborative model for drug therapy might be one in which the physician diagnoses and makes initial treatment decisions for the patient and the pharmacist contributes to the selection, initiation, monitoring, modification, continuation and discontinuation of pharmacotherapy as appropriate to achieve the desired patient outcomes.

An expanded scope of practice for support personnel (eg. pharmacy technicians) and increased use of automation would help to address the workload issues within pharmacies. Hospital pharmacists have made significant progress over the years in delegating technical tasks such as drug distribution to non-professional support staff. CSHP recently published a paper entitled “An Information Paper on the Role of the Pharmacy Technician” which provides support and direction for the delegation of further tasks to pharmacy technicians.\(^{35}\) Further delegation of technical tasks is required in hospital and community pharmacies to allow pharmacists to focus on direct patient care activities.

Several hospitals have moved towards the use of automated medication distribution systems which when used appropriately with inherent quality checks, can help decrease medication errors and increase efficiency. Increased investments in this area would help address some of the workload pressures within pharmacies, while improving the overall safety of the medication distribution process.

4. Electronic Patient Records and Electronic Prescribing

The efficiency and effectiveness of our drug therapy processes, and in fact all aspects of health care, would be significantly improved by the development of electronic patient records and electronic prescribing. An electronic patient record would enable the sharing of relevant patient information across various care settings, providing much needed patient information at the point of care. Electronic patient records could also help to reduce costs to the system by reducing unnecessary duplicate tests and duplicate drug therapies. If an electronic health record becomes a reality, it is
important that all health care professionals have the authority to access the
information they need to effectively fulfil their role on the health care team. For
example, pharmacists must be able to access information pertinent to the
pharmaceutical care of the patient, including indication for drug therapy, concomitant
conditions, laboratory results, etc.

Electronic prescribing systems have been shown to decrease medication errors,
shorten the time taken to process prescriptions, and increase the accuracy and
efficiency of the drug use process. The “Leapfrog Group for Patient Safety”, a consortium
of more than 90 Fortune 500 companies and other large private and public health care
purchasers, has identified initiatives that have the potential to save up to 58,000 lives
and prevent up to 522,000 medication errors each year. Prevention of the
medication errors is anticipated to be achieved through implementation of
computerized physician order entry (CPOE). CPOE systems are electronic
prescribing systems that intercept error when they most commonly occur – at the time
medications are ordered. Orders are entered directly into a computer system and are
integrated with patient information, including laboratory and prescription data. The
order is then automatically checked for potential errors or problems. Pharmacists
currently attempt to do this check but, due to limited fiscal and/or human resources,
they are not able to review all medication orders before they affect the patient. To
develop appropriate databases for COPE, pharmacists are intimately involved in
identifying all areas of potential error and developing systems to reduce or eliminate
that error.

5. Community Based Educational Programs

It is crucial that drugs are prescribed as rationally as possible to ensure high quality
and cost-effective use. To achieve these goals, physicians must have evidence-based,
objective and unbiased information regarding drug therapy choices. One of the more
successful methods of providing this information to physicians is through community
based educational outreach programs such as “academic detailing”.

Academic detailing programs involve the delivery of education, most often through
brief one on one discussions between academic detailers (usually pharmacists) and
physicians. With some programs, written information (e.g. a newsletter) is provided
in advance of the discussion. The educational sessions usually focus on a specific
therapeutic class of drugs, with key messages provided regarding the available
choices. Academic detailing programs have been shown to shift prescribing patterns
to more appropriate agents and reduce drug costs.

Through the development and maintenance of formulary systems and the provision of
direct patient care, hospital pharmacists have significant experience in evidence-based
practice and critical appraisal of the literature. In addition, hospital pharmacists
provide drug information to health care providers and patients regularly every day.
Given this background, they are well positioned to provide leadership in the
development of academic detailing programs. Hospital pharmacists developed the
first two Canadian academic detailing programs. The first one was established in British Columbia in the mid 1990’s, and the second was established in Saskatchewan a few years later; the Saskatchewan program has since expanded to include most of the province. Most other provinces are also investigating the implementation of academic detailing programs. Although the results from the Canadian programs have not yet been published, very positive feedback and support has been provided by family physicians. In addition, preliminary data indicates a shift in prescribing patterns to recommended agents and cost savings within some drug classes.

Recommendations

i. Provide consistent and enhanced funding to facilitate increased involvement of pharmacists in direct patient care and drug use management roles, throughout the continuum of care.

ii. Develop an integrated approach to health professional resource planning, to address current shortages and ensure adequate levels in the future.

iii. Realign the functions and responsibilities of health care professionals in order to capitalize on their expertise and training. Review and where appropriate, expand the scope of practice for health professionals. For pharmacists, the scope of practice could be expanded to include a collaborative role in prescribing. For pharmacy technicians, the scope of practice could be expanded to include more responsibility for technical aspects of pharmacy distribution services.

iv. Provide funds to support the implementation of automated medication management systems in hospital pharmacies to enhance the safety and efficiency of drug distribution systems.

v. Provide funds for the establishment of electronic patient records, and electronic prescribing. All health disciplines must have the authority to access information from the electronic record so they can effectively fulfil their role on the health care team.

vi. Develop community based educational outreach programs such as academic detailing to promote high quality and cost-effective drug use.

4.3. Managing Change

Hospital pharmacists are no strangers to working within a constantly changing environment. Over the years, the fiscal restraints of the hospital sector have resulted in numerous changes in personnel, processes, and organizational structures. Despite this unstable environment, hospital pharmacists have continued to make significant strides in improving patient care and managing drug costs.
Issues

1. Accountability & Outcomes

All stakeholders, including governments, health care professionals, and patients, share accountability for the provision of high quality and cost-effective health care. In the past, accountability in health care has primarily referred to the fiscal aspect. While financial inputs are important, our view on accountability must shift to one that focuses on outcomes. For drug therapies, and other facets of the health system, the desired outcomes are ones that demonstrate improvements in health and value for the dollars invested. Support for outcomes based health research needs to be continued and enhanced, so that our health services and drug treatments can be based on sound evidence.

2. Information Systems

Evidence-based decision-making by Canadian health care administrators and policy makers is limited by the lack of adequate, integrated health information systems. In order to effectively evaluate health services and programs, and make appropriate plans for the future, it is essential that we acquire reliable information on resource consumption, efficiency of health services delivery and population health outcomes. As health information networks are being developed in isolation in several provinces (eg. PharmaNet in B.C., Alberta We//net initiatives, etc), it is critical that the proposed national health network be given a high priority. The Standing Committee on Social Affairs, Science and Technology headed by Senator Kirby addresses the need for investment in health information technology and CSHP supports this position.

3. Drug Use Evaluation

Hospitals and regions have successfully used Drug Use Evaluation (DUE) programs to evaluate the appropriateness of drug therapy within their institutions, and measure the cost-effectiveness of drug use. Within the DUE process, pharmacists systematically evaluate drug usage against predetermined criteria. Pharmacists then initiate educational programs to ensure that medication usage within the institution/region improves. DUE programs have been shown to more than pay for themselves through the savings achieved.\(^{(20)}\)

The documented problems with inappropriate drug use indicate there is a need for effective DUE programs that assess drug use in the community. Implementation of electronic patient records and electronic prescribing would greatly facilitate a broad scale DUE process to ensure drug-therapy is cost-effective. Effective post-marketing drug surveillance programs, and national drug utilization information could provide detailed information on how drugs are being utilized, as well as an analysis of drug
costs and cost drivers. This information is needed to enable better formulary management, prescribing, and regulatory (safety) decisions.

**Recommendations**

i. Set desired health outcomes and foster an environment in which all stakeholders share accountability for achieving these.

ii. Sponsor outcomes based research to support evidence-based decision-making throughout our health care system.

iii. Provide funds for the development of health information infrastructures to support the evaluation of services and programs, assess resource consumption, measure outcomes and facilitate more effective decision-making.

iv. Develop broad-scaled Drug Use Evaluation (DUE) programs in hospitals and community settings to evaluate the appropriateness and cost-effectiveness of drug therapy. Improved information technology is required for this to be effective, particularly in the community setting where access to complete patient information is limited.

### 4.4. Cooperative Mechanisms

Providing optimal health care services is a shared responsibility; the patient, physician, nurse, pharmacist, and other health professionals must all work together toward the common goal of improving patient outcomes and ensuring cost-effective treatments.

**Issues**

1. Collaborative Practice Model

Ensuring appropriate and cost-effective drug therapy is becoming increasingly challenging. Currently there are over 20,000 drug products available on the Canadian market and new products are continually being released. In addition to the sheer number of available drugs, prescribers and other health professionals must contend with 33,000 known drug interactions, 6500 contraindications for different diseases and 3500 drug allergy contraindications. As the drug experts, pharmacists can provide much needed assistance in ensuring that the right drug is selected for the individual patient.

Within the hospital environment, pharmacists have established excellent collaborative relationships with their physician and nursing colleagues, who respect and trust their knowledge and abilities. Working as part of the multidisciplinary team, hospital pharmacists have shown that they can make significant contributions to patient care while positively impacting health care costs. This multidisciplinary team approach,
with the pharmacist as an integral member, is needed throughout the system, from primary to tertiary care.

2. Duplication of Efforts

Our limited fiscal and human resources in health care, make it even more important than ever to reduce duplication and share expertise wherever possible and beneficial. Hospital pharmacists have unique expertise in drug use management and this expertise could be applied in community settings with substantial benefit to the health system.

Recommendations

i. Foster the creation of multidisciplinary teams throughout the spectrum of care, from primary to tertiary care. Pharmacists should be included on these teams to ensure drug therapy is optimal.

5. Conclusion

The cost of inappropriate drug use in Canada is significant from economic and patient health perspectives. Any system that invests close to $15 billion in drug therapy, only to create similar costs in associated problems, is clearly untenable. Canadians, and the Canadian health system, are in dire need of improved drug use management.

Hospital pharmacists have demonstrated that the effective use of their expertise can result in improved health outcomes and reduced costs. However, to achieve significant gains throughout the entire system, an appropriate level of pharmaceutical care must be provided across the continuum of care. The considerable expertise and experience of hospital pharmacists, particularly in the areas of collaborative practice models and drug use management, can help achieve that level with substantial benefit to Canada’s health system.
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Appendix I - What do Hospital Pharmacists do?

The number of pharmacists within an institution, as well as their specific roles and responsibilities, varies considerably from facility to facility. Most hospital pharmacy departments have a mix of direct patient care services, drug use management responsibilities, administrative duties and other supporting functions such as education and research.

A. Direct Patient Care

Pharmacists in many hospitals routinely practice pharmaceutical care where they work with the patient to identify, resolve and prevent drug-related problems. They are frequently part of a multidisciplinary team where they are recognized as the drug experts. Like other members of the team, hospital pharmacists have access to relevant patient-specific information (e.g. diagnosis, lab results) in order to best capitalize on the expertise of each provider.

Hospital pharmacists can be found throughout the spectrum of patient care services, from preventive/health promotion activities (e.g. vaccination programs, risk assessment and modification of lifestyle), involvement in various acute care inpatient programs (e.g. cardiology, infectious diseases, intensive care), to various outpatient clinics and home care programs (e.g. anticoagulant service, asthma management clinic, home intravenous therapy programs, palliative programs). A recent report on hospital pharmacy in Canada showed that pharmacists are involved in many inpatient and outpatient programs, including (26)

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<td>- intensive care units</td>
<td>- diabetes clinic</td>
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<td>- surgical units</td>
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<td>- mental health units</td>
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Within these patient care programs, the pharmacist is typically responsible for a wide range of clinical services, such as taking medication histories, assessing and monitoring therapy including choice of therapy, dose, and formulation, reviewing lab tests and
interpreting results, routine consultations with physicians and nurses, and patient teaching.

In many institutional settings, pharmacists also have some level of authority and responsibility for prescribing. A recent report prepared by CSHP demonstrated that a broad range of pharmacist-managed or collaborative drug therapy programs exists in Canadian hospitals. Prescribing by pharmacists takes place in several different formats, including:

- Therapeutic interchange
- Selection of non-prescription drugs
- Aminoglycoside and pharmacokinetic dosing service
- Anticoagulant therapy for inpatients and outpatients
- Total parenteral and enteral nutrition support
- Cancer related analgesic management
- Chemotherapy related antiemetic management
- Insulin and oral hypoglycaemic drug dosing and adjustment
- Renal dysfunction dosage adjustment program
- Hypertension clinic
- Hyperlipidemia clinic
- Ambulatory patient medication refill clinic

Hospital pharmacists participate in many activities designed to facilitate continuity of care for patients as they move across care settings (e.g., from home to hospital to home). Examples of these ‘seamless care’ activities are provided below. Involvement in specific activities varies from institution to institution, and is often dependent on the specific type of facility as well as the pharmacy resources available.

- Taking medication histories from patients to help reduce errors on admission to hospital
- Communication with community providers regarding medication therapy prior to admission
- Discharge counselling, provision of patient specific drug information
- Provision of compliance aids
- Providing relevant patient information (with patient consent) to community providers
- Provision of outpatient medications with appropriate counselling through outpatient pharmacies and outpatient clinics
- Involvement in home visits
- Provision of required medications and education for home parenteral therapy programs

B. Drug Use Management

For years, hospital pharmacists have had a strong emphasis on cost-effective use of drugs. Pharmacists contribute to the cost-effective use of drugs through the management of formularies, establishment of drug policy and guidelines, and drug use evaluation
programs. Many hospital pharmacists also contribute to provincial “Formulary Committees” that make decisions regarding drug coverage in community settings.

A drug formulary is a list of pharmaceutical products approved for use in a particular setting. It reflects the combined current clinical judgement of pharmacists and physicians who select the most appropriate drugs to treat specific conditions. Working with other health professionals on the Drug and Therapeutics Committee, hospital pharmacists apply clinical, therapeutic, financial, and pharmacoeconomic information in the formulary management process. The intended benefits include more cost-effective prescribing, improved quality of care through better identification of the best treatments, and elimination of inefficient treatments or those with avoidable risks of adverse reactions.

Pharmacists also play an integral role in development of drug policy. Many hospital pharmacists have been directly involved in developing Clinical Practice Guidelines (CPGs), both at the institutional level and on a much broader basis (e.g., provincial, national). CPGs are intended to reflect current medical opinion for the best treatment choices. These guidelines are used by physicians and other health care professionals to guide decisions related to patient care. These policies and guidelines impact the effectiveness of patient care as well as cost and drug resistance issues.

Many hospitals have Drug Use Evaluation (DUE) programs. Within the DUE process, pharmacists systematically evaluate drug usage against predetermined criteria. Hospitals and regions have used DUE programs to evaluate the appropriateness of drug therapy within their institutions, and measure the cost-effectiveness of drug use. DUE programs have been shown to more than pay for themselves through the savings achieved.20

C. Medication Distribution Systems

Hospital pharmacists are responsible for overseeing the facility’s medication distribution system. They work to ensure safe, effective, and efficient systems and processes designed to minimize the opportunities for medication errors. Significant progress has been made over the years, in delegating the technical tasks related to drug distribution to trained pharmacy technicians and assistants. As well, several hospitals have moved towards the use of automated medication distribution systems, which help reduce workload and the opportunity for errors.

Within healthcare facilities, pharmacists play a pivotal role in the prevention and review of medication errors. They work proactively to address medication system issues so that the potential for medication errors is reduced. They promote best practices which include unit dose drug distribution in inpatient settings, computerized physician order entry, standardizing and simplifying prescribing and drug administration processes, using error-preventative packaging, and instituting 24 hour pharmacy services.

Hospital pharmacists are key players in identifying adverse drug reactions and reporting them to Health Canada to fully develop the database of information on this subject.
D. Education

The education and training of students is a routine responsibility for most hospital pharmacists and in many hospitals, the involvement in teaching is extensive.\(^{(26)}\) Included is education of undergraduate pharmacist students, technician students, hospital pharmacy residents and Pharm. D. students.

With respect to undergraduate pharmacist students, hospital pharmacists make significant contributions to curriculum development and cross-appointments of hospital pharmacists to faculties of pharmacy are common. Hospital pharmacists also participate as preceptors and mentors for students in their clinical rotations. Approximately 800 final year pharmacist students from Canadian faculties of pharmacy spend a minimum of 3-4 weeks in a “Structured Practical Experience (SPE) in the hospital setting. In addition, hospital pharmacists are involved in teaching and mentoring post-graduate pharmacy residents and Doctor of Pharmacy students.

Hospital pharmacists also contribute to the education of other health professionals, (eg. physicians, nurses, dieticians, etc) through in-services, medical and/or nursing rounds, participation in conferences, and submissions to reference texts and journals.

E. Research

In the hospital setting, clinical drug trials are typically multidisciplinary in nature, and participation of a pharmacist is routine. In addition, many pharmacists also conduct research in various facets of pharmacy practice. Seventy (70\%) percent of teaching hospitals and 21\% of non-teaching hospitals reported involvement of pharmacy staff in conducting research.\(^{(26)}\)