



Phil Chan



Kelly Grindrod

# A systematic review of remuneration systems for clinical pharmacy care services

Phil Chan; Kelly A. Grindrod, BScPharm, PharmD, ACPR; David Bougher, BSP, MHSA; Franco M. Pasutto, PhD; Chuck Wilgosh, BScPharm, MBA; Greg Eberhart, BScPharm, CAE; Ross Tsuyuki, BScPharm, PharmD, MSc, FCSHP, FACC

We undertook this review to explore the systems of remuneration that exist for pharmacist clinical services.

We were especially interested in systems that are well-established and that have been evaluated for impact, economic efficiency, and utilization.

*Nous avons réalisé un examen des systèmes de rémunération des services cliniques offerts par les pharmaciens.*

*Nous nous sommes intéressés plus particulièrement aux systèmes bien établis, dont l'incidence, la rentabilité et l'utilisation ont été évaluées.*

*Mr. Chan and Dr. Grindrod are co-primary authors on this manuscript.*

## Abstract

**Objective:** To provide descriptions of existing remuneration models for pharmacist clinical care services and to summarize the existing evaluations of economic, clinical, and humanistic outcome studies of the remuneration models.

**Methods:** We searched MEDLINE, EMBASE, International Pharmaceutical Abstracts, EconLit, Scopus, Web of Science, Google Scholar, and PubMed from date of inception to June 2006. We also searched the World Wide Web, hand-searched pertinent journals and reference lists, and contacted experts in pharmacy practice research. One reviewer assessed titles and, with a second independent reviewer, assessed abstracts and full-text articles for inclusion and abstracted data. Disagreements were resolved by discussion or by a third independent reviewer. We included English language articles that described or evaluated current remuneration systems for pharmacist clinical care services and that involved a substantial number of pharmacists and that were paid by a third party other than the patient. Due to heterogeneity

between systems, data were compiled qualitatively. Then, based on these results, an expert panel developed recommendations for implementing a remuneration model into current pharmacy practice in Alberta.

**Results:** We identified 28 remuneration systems. Most commonly, payers were government agencies, and services were directed at the management of chronic diseases or complex medication regimens. While capitation models were evident, most systems provided payment according to each intervention carried out. Program evaluations were available from 14 models, and in many systems, initial uptake by pharmacists was high, but participation dropped after initial enrolment.

**Conclusion:** To ensure that the provision of clinical care services will provide a sustainable avenue of income for pharmacists and cost-effective quality care for patients, a viable business model with additional training and support for pharmacists and ongoing program evaluation is needed. *Can Pharm J* 2008;141:102-12.

For many years, the pharmacy profession has been undergoing a major ideological shift. As the health care system becomes increasingly strained, pharmacists are in an ideal position to move away from a traditional dispensing role toward one that focuses on managing chronic diseases and medication therapy. To ensure that this shift in professional responsibilities is successful, there is a need for pharmacists to change their traditional business model and move toward alternative systems of compensation. At present, most community pharmacists in Canada are not compensated, beyond the current dispensing fee model.<sup>1</sup> Within this payment model, pharmacists are expected to provide basic drug-specific patient counselling and guidance to patients and physicians. Providing this service generally depends on the pharmacists' interpretation of each prescription in the context of other drugs and diseases (where known) on the patient's medication profile.

Evidence from pharmacy practice-based research is beginning to accumulate, demonstrating the benefit of pharmacist-led interventions on patient care.<sup>1-4</sup> These interventions, however, are often developed in the context of health services research trials, and thus wide-scale implementation is limited by a lack of remuneration for the services that are studied. In fact, this lack of support for pharmacist clinical care services is a common barrier to practice change, and unless this barrier is addressed, any move toward pharmacist provision of clinical care services will likely fail to materialize. This review examines existing models of remuneration around the world for pharmacists who provide clinical care. The goal of this review was to provide information to assist Canadian pharmacists in creating a platform from which they can develop their own remuneration programs, in collaboration with both public and private payers (e.g., employer-paid health insurance).

## Methods

Pharmacist clinical care services were defined as those that enhanced a patient's medication therapy or overall health and did not include medication preparation, distribution, or any tasks delegated to a typical Canadian pharmacy technician with basic training. In consultation with a medical librarian, we searched the following databases from date of inception to June 2006: MEDLINE, EMBASE, International Pharmaceutical Abstracts, EconLit, Scopus, Web of Science, Google Scholar, and PubMed. Examples of search

terms are as follows: *pharmacist*, *community pharmacy service*, *pharmaceutical economics*, *pharmaceutical services*, *reimbursement*, and *cognitive service*. We searched the World Wide Web for grey literature, hand-searched pertinent journals and reference lists, and contacted experts in the area of pharmacy-practice research to identify papers that were omitted in the electronic search. Authors were contacted to obtain missing or unclear information.

We included English language articles that described or evaluated current remuneration programs for pharmacist clinical care services in any setting. The articles had to describe a system where remuneration was paid by a third party, other than the patient (e.g., government), and be separate from dispensing fees. Systems that required the patient to pay for services directly were excluded; we wanted to focus on systems that supported the pharmacist as a provider of clinical care services in the setting of a larger remuneration system. Further, the remuneration program had to involve a substantial number of pharmacists (e.g., all pharmacies in a region), rather than just private agreements between a few pharmacists and their patients and/or payers.

One reviewer (PC) was responsible for reviewing titles to generate a list of abstracts for review, and 2 reviewers (PC and KG) independently assessed abstracts and full-text articles for inclusion. Disagreements were resolved by discussion, and when they remained unresolved, a third independent (RT) reviewer was consulted. Two independent reviewers (PC, KG) extracted data. To make studies comparable, all costs were converted to Canadian dollars for the year of study, using the exchange rate for the year of the most recently published remuneration rates and then inflated to a 2006 price base, using the health care component of the Canadian Consumer Price Index. Due to the nature of the review subject and the significant heterogeneity among systems, data were compiled qualitatively, and effect measures were not calculated.

A panel group that comprised representatives from The Centre for Community Pharmacy

## Key points

- The goal of this review was to provide information to assist Canadian pharmacists in creating a platform from which they can develop their own remuneration programs, in collaboration with both public and private payers.
- The most common approach to remuneration was a fee-for-service system that paid pharmacists for disease management and medication-therapy management. Most systems do not appropriately consider the business model for community pharmacy practice.
- Although many systems of remuneration have been implemented, there is often poor uptake by pharmacists, poor support for pharmacists, and very little evaluation.

*This paper was supported by a grant from the Canadian Foundation for Pharmacy.*

Research and Interdisciplinary Strategies (c/COMPRIS), Faculty of Pharmacy and Pharmaceutical Sciences at the University of Alberta, the Alberta College of Pharmacists, and Alberta Health and Wellness (Government of Alberta) reviewed and made conclusions on the findings from the literature review. In addition, the group provided recommendations for developing an action plan to promote remunerated clinical care in Canadian pharmacy practice, based on lessons learned from other systems.

## Results

We identified 28 established systems that are providing either pharmacies or pharmacists with remuneration for clinical care services, independent of the dispensing of a product (Figure 1). Table 1, "Summary of characteristics of systems for pharmacist remuneration," is available online at [www.cpjournal.ca](http://www.cpjournal.ca) or [www.pharmacists.ca/cpj](http://www.pharmacists.ca/cpj). Of the remuneration systems identified, 12 were developed for community pharmacies, 7 for hospital pharmacy services (both inpatient and outpatient), 1 for a family practice site, 2 for care provided in patients' homes, and 2 for residential care. The remaining 4 systems were for various sites not specific to a community or a hospital pharmacy. A total of 17 systems were established and funded by government agencies, 9 systems were funded by

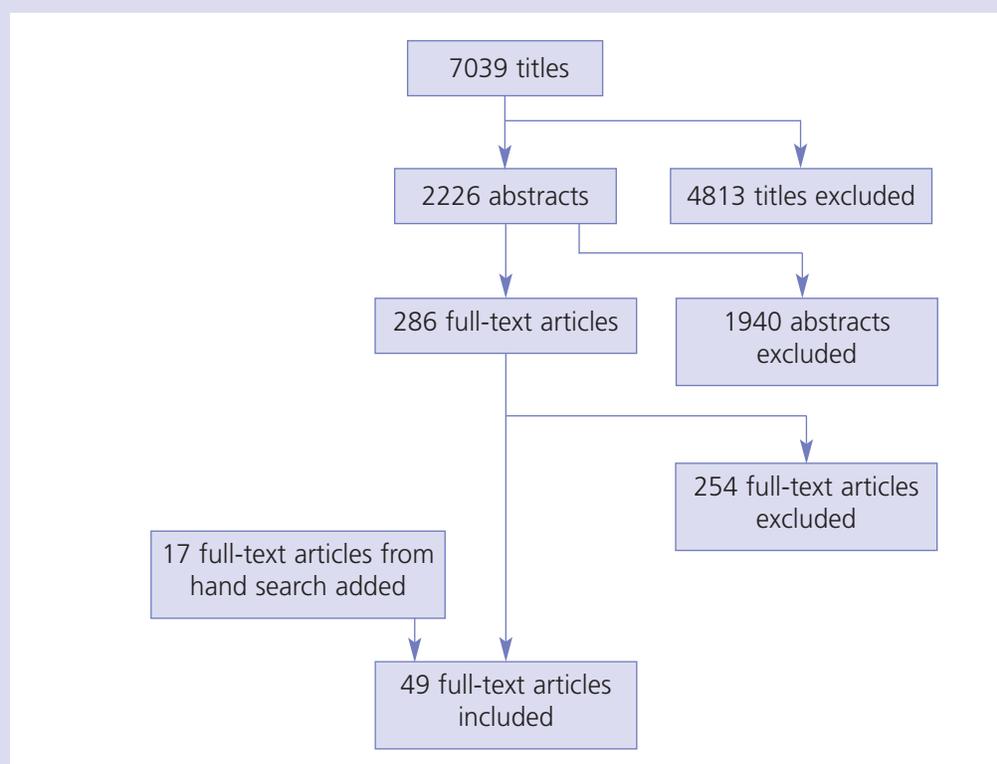
private third-party payers, 1 system was either established or funded by both government and third-party payers, and 1 was established by an unknown source.

## Payers

Payers of community pharmacist clinical care services included both government and private third parties, though the majority of regional or national programs involved government payers. In systems for which private third-party payers provided remuneration, the reasons cited for the involvement included the following: the development of mandatory legislation (e.g., the Diabetes Outpatient Education system in the US); negotiations between local pharmacist groups and third-party payers (e.g., Asheville Project); and partnerships between private pharmacy consultancy groups and third-party payers.<sup>5-9</sup>

All hospital-based systems for the remuneration of clinical care services were initiated in the early 1980s and have been discontinued, with the exception of those in Japan.<sup>10-15</sup> However, the current status of remuneration for these services in Japan has changed from the model described in the papers retrieved for this review,<sup>16-18</sup> and further information could not be obtained (personal communication, E. Akaho, 25 July 2006).

FIGURE 1 Trial flow summary



### *Types of service*

The main types of services remunerated include medication therapy management (MTM), disease management, or nondispensing services related to the provision of a medication (medication-related services). MTM typically involved medication reviews by pharmacists with the resolution of any drug-related problems to optimize drug use.<sup>8,16,19-22</sup> Disease management services most commonly involved diabetes-related education, training, and monitoring in the community setting.<sup>7,19,23</sup> Disease-management programs had usually been initiated prior to 1980 and focused on post-discharge care of hospitalized patients with multiple disease states.<sup>10,12,13</sup> Medication-related services included counselling for prescription and over-the-counter (OTC) medications and identifying and resolving adverse drug reactions and drug interactions in consultation with prescribing physicians.<sup>24-28</sup>

With the exception of services initiated during the provision of a medication, most systems encouraged or required physician involvement at some point in the process.<sup>9,16,20,21,23,24,27</sup> Most programs also required additional training or competency assessments for pharmacists. Quality assurance systems were also evident among some programs.<sup>8,9,23,27</sup>

### *Remuneration schedules*

The most common model, the resource-based relative value scale (RBRVS), involves setting a fixed rate to be paid per intervention, depending on the time spent or effort required. The capitation model, which sets a rate on a per-patient scale, was less common. In all systems, the remunerated amount correlated with the pharmacist's required time and effort, which translated into greater rates for MTM and disease-management services compared with medication-related services.

The rate of payment for MTM generally ranged from \$27 to \$170 per review, depending on various factors that included the number of drug-related problems resolved, interventions performed, and time spent. Payments for disease management ranged from \$33 to \$134.80 per visit, with more remuneration given per session if group sessions were carried out. Payment for medication-related services ranged from \$4 to \$17 per intervention, depending on the time spent and whether the physician was contacted.

### *Evaluation of outcomes*

Only 14 systems had been evaluated for an effect on clinical, humanistic, or economic outcomes

(Table 2), and significant heterogeneity made comparison between evaluations difficult. Most evaluations focused on health provider satisfaction and program uptake, with clinical and economic outcomes rarely evaluated.

Generally, remuneration systems were determined to be beneficial to patients. No program was associated with worsened patient outcomes. In the Asheville Project, patient education and monitoring by pharmacists improved hemoglobin A<sub>1C</sub> (HbA<sub>1C</sub>) levels, reduced blood pressure, and increased influenza vaccination rates and the proportion of patients with diabetes who received eye and foot examinations.<sup>6,7</sup> In the Australian Home Medication Review (HMR) program, a survey of 57 patients who received a medication review showed improved patient outcomes, including reductions in medication-related health problems and reports of anxiety and depression.<sup>29</sup> Likewise, 25% of patients received a medication management plan from their GP in a visit following the review.

Although medical cost savings were suggested in several of the programs, they were generally limited to rough estimates. The Washington Cognitive Activities and Reimbursement Effectiveness (CARE) Project, for example, estimated that the cost savings to Medicaid per patient ranged from \$21.69 to \$118.54, accruing over 1 year.<sup>30</sup> This, however, did not consider all evaluated interventions that could lead to potential cost savings, such as those owing to increased adherence with counselling.

In the Iowa Pharmaceutical Care Delivery Demonstration Project, the fiscal impact of the program was budget neutral when both medical and pharmaceutical claims were considered.<sup>8</sup> The program's evaluation stated that demonstration projects lead to administrative fees that are often higher than those in an established system.<sup>8</sup> Conversely, the Australian HMR program demonstrated cost savings, along with gains in quality-adjusted life years (QALY) and future cost savings, suggesting that budget gains may be evident after the demonstration project progresses into a permanent system.<sup>29</sup> In Scotland's Minor Ailment Service, pharmacist-led assessments allowed the transfer of 40% of the general practitioner's visits from patients who presented with minor ailments to pharmacists and nurses.<sup>31</sup> Hence, Primary Care Trusts in England are showing interest in Minor Ailment Services as a cost-effective local health service to meet national health targets.<sup>31</sup> In the Asheville project, the number of sick days decreased every year from 1997 to

## Numerous factors likely affected uptake of these programs, but one of the most important determinants of success may be the pharmacists' personal beliefs in the potential benefits of clinical care

2001. In fact, for 1 employer alone, there was an estimated increase of \$26,000 in productivity.<sup>6</sup>

### *Uptake and sustainability*

The proportion of pharmacies that enrolled to provide clinical care services was generally high — in fact, 80% or over in systems such as the Australian HMR, Iowa Pharmaceutical Case Management, and the Asheville Project.<sup>8,29,31</sup> However, the proportion of enrolled pharmacies actually providing clinical care services varied significantly between systems, despite high initial uptake. The percentages of eligible patients who received an intervention were high for developing programs; namely, the Iowa outcomes-based pharmacist reimbursement program and the Asheville Project at 74% and 100%, respectively.<sup>6-9</sup> In established ongoing systems, though, intervention rates were generally lower, with rates at approximately 20% for both the nation-wide Australian HMR and the UK's Medicine Use Review/Prescription Interventions.<sup>20,27,32,33</sup> Despite having one of the highest proportions of enrolled pharmacies providing interventions, only 33% of eligible patients in the Iowa Medicaid pharmaceutical case management project met with the pharmacist.<sup>34</sup>

The proportion of claims that were reimbursed was generally high — 83% in CARE and 100% in Nova Scotia and the MUR/PI program.<sup>26-28,30,35</sup> With respect to adequacy of the remuneration for the effort expended, 60% of pharmacists in the Australian HMR believed that the rate was insufficient for a review that took an average of 3.5 hours.<sup>36</sup> The cost of accreditation also ranged from \$2800–\$7900, with incentives of \$710–\$1421 for re-accreditation and newly accredited pharmacists. It was calculated that 11 completed reviews were necessary to cover the cost of accreditation, and 20% of accredited pharmacists stated that they were unlikely to maintain or were unsure of maintaining accreditation.

### **Discussion**

This review has identified 28 distinct systems of remuneration for pharmacist clinical care services. Services include medication therapy

management, disease management, and medication-related services, and just over one-half were remunerated by government payers. Remuneration rates were highly variable. Only 14 systems evaluated clinical, economic, or humanistic outcomes. Generally, the most common humanistic outcomes were pharmacist uptake, which was higher in trial programs but decreased in established systems, because of the lack of physician awareness or acceptance, time constraints, and inadequate fees for service. The few programs that evaluated clinical and economic outcomes suggested either neutral or beneficial effects. Based on the systems identified in this review and the evaluations discussed, we hope to provide background to others who are considering the development and implementation of sustainable programs that will encourage pharmacist participation and improve clinical and economic outcomes.

Despite the publication of numerous articles that address remuneration of pharmacy services, few papers discussed specific systems, and even fewer evaluated and compared existing systems. In a 1999 systematic review of the pharmacy remuneration literature, McDonald and colleagues reviewed studies that specifically evaluated various types of pharmacy payment models and their effect on pharmacist practice patterns, drug utilization patterns, and client outcomes.<sup>37</sup> The review located only 8 studies, 1 of which was of high methodological quality, concluding that despite the large volume of literature on the area of pharmacy remuneration, there remains a lack of controlled studies on the effects of remuneration. Further, the studies concluded that capitation remuneration-style programs can decrease drug costs by increasing the use of generic substitution and that fee-for-service remuneration was associated with increased documentation of pharmacy services. These results, similar to our observations, demonstrate that although there are various systems in place around the world, few have been rigorously evaluated.

In 2005, a report on medication therapy management was prepared for the American Pharmacists Association to provide a model for

payers to use when developing remuneration systems for pharmacists.<sup>38,39</sup> The report provided numerous recommendations for both pharmacists and third-party payers based on a literature review, opinion leader and stakeholder interviews, and the implementation of the Medicare MTM service. Recommendations to pharmacists included standardizing and packaging service offerings of various intensities, standardizing billing and service delivery, cultivating widespread patient support, increasing physician awareness, and conducting a systematic evidence-based review of the literature surrounding MTM. Recommendations for the third-party payers included determining a target number of individuals, working with pharmacists to develop MTM services, developing mechanisms to evaluate overall health costs, and developing payment systems that at least cover the cost of pharmacy labour.<sup>38</sup>

In 2006, the Academy of Managed Care Pharmacy prepared a consensus statement, endorsed by numerous stakeholder organizations, including the American Pharmacists Association, American Geriatrics Society, and the American College of Clinical Pharmacy. The statement suggests the important elements of an MTM program:

- Patient-centred approach
- Interdisciplinary, team-based approach, including effective communication
- Program development with population and individual patient perspective
- Flexibility of programs
- Evidence-based medicine
- Promotion of services by health plans and health care professionals<sup>39</sup>

This review, however, was limited by the significant heterogeneity of identified systems and corresponding evaluations. As a result, it provides a qualitative summary of the current literature surrounding pharmacist remuneration systems. Beyond broadly grouping systems into MTM, disease management, and medication-related services, most models differed substantively in their scope, remuneration rates, patient groups, and payers. Despite a wide search, there was a general paucity of information on both current and discontinued systems, and even fewer evaluative studies on economic and patient outcomes. This review was limited to systems described in the literature and those in multiple pharmacies, and so does not include all systems in existence.

In the systems identified, pharmacist participation was usually high during registration and

accreditation stages, but actual intervention rates were often lower than expected. Evidently, most pharmacists were eager to change pharmacy practice, but the extent to which they were willing to provide clinical services was variable. Numerous factors likely affected uptake of these programs, but one of the most important determinants of success may be the pharmacists' personal beliefs in the potential benefits of clinical care. If a pharmacist lacks the determination to provide "above-and-beyond" services, this usually translates into less than optimal clinical services, regardless of how nurturing the environment. In addition, pharmacists and corporate pharmacy stakeholders may continue to find dispensing more efficient and lucrative under the current dispensing-focused remuneration system, compared with a clinical-services-focused system that requires implementation, and increased time and effort for a questionable financial rate of return.

For this reason, a remuneration program should be implemented first, choosing a select group of pharmacists who are already practising at an advanced level; specifically, those who manage their own specialty clinics (e.g., outpatient anticoagulation management). Implementing a pilot program with participation from all levels of pharmacists may result in a high initial uptake but a low actual output — a trend seen in many of the existing programs.<sup>34</sup> Demonstrated success in terms of clinical, economic, and humanistic outcomes within a selected group of pharmacists would allow others to benefit from this experience and may provide motivation to engage in an alternative remuneration program.

To develop a viable business model that will be readily accepted and maintained, implementation costs should be considered to ensure adequate pharmacist training, reasonable documentation of interventions, and participation in the certification and accreditation processes. Successful implementation is of the utmost importance to provide value to funders for the large sum of health care funding being invested. Another consideration is the type of model that will meet the

## Points clés

- *Cet examen avait pour but d'obtenir des renseignements, afin d'aider les pharmaciens canadiens à créer une plate-forme à partir de laquelle ils pourront élaborer leurs propres programmes de rémunération, en collaboration avec les tiers payeurs publics et privés.*
- *Le système de rémunération le plus répandu est le système de paiement à l'acte, en vertu duquel les pharmaciens sont rémunérés pour les services de gestion thérapeutique et pharmacothérapeutique offerts. La plupart des systèmes ne tiennent pas compte adéquatement du modèle d'entreprise des pharmacies communautaires.*
- *De nombreux systèmes de rémunération ont été mis en place, mais, souvent, peu de pharmaciens y adhèrent ou les appuient et ces systèmes ont rarement fait l'objet d'évaluation.*

TABLE 2 Summary of system evaluations

**Pharmaceutical Case Management Program (2000–present)**<sup>8,21,22,32,47</sup>

**Design:** Survey on patient status.

**Objective:** To assess uptake of PCM by pharmacists 3 months after pharmacies were notified of initial patient eligibility.

**Uptake:** *Patients:* 2931 enrolled, 96.7% of surveys for eligible patients returned. At 3 months after initial eligibility, 33.3% met with a pharmacist, 26.9% had been worked up, 17.6% had recommendations sent to physician, 11.5% had physician responses.

*Pharmacies:* 117 enrolled, 40%–60% of pharmacies provided little or no PCM services within 3 months of notification of patient eligibility. Pharmacists detected an average of 2.6 medication-related problems per patient.

**Barriers:** Patient access issues (23.2%), pharmacy staffing or start-up issues (22.2%), lack of physician acceptance, administrative requirements; lack of support staff in pharmacy for administrative issues.

**Economic:** No change for the net number of medications or medication charges, and the number of drugs and charges increased for both patients receiving and not receiving the PCM service.

**The Asheville Project (1997–present)**<sup>6,7,48</sup>

**Design:** Before and after cohort design with comparator group.

**Objective:** To assess clinical, economic, and humanistic outcomes of services provided for 2 groups of patients at 2 different time points (short- and long-term).

**Uptake:** A total of 256 patients enrolled in the Diabetes Management Program and 207 enrolled in the Asthma Management Program.

**Diabetes Management Program:**

**Clinical outcomes:** *Short term:* No difference in HbA<sub>1C</sub> or lipids between groups at baseline or at 7 to 9 months; target HbA<sub>1C</sub> values improved when groups were combined; diabetes-specific costs increased by 85% (\$85.20); all-diagnosis costs decreased by 16% (\$134.35) (insignificant); HRQL not statistically significant. *Long term:* Number of patients with optimal HbA<sub>1C</sub> values increased at each follow-up, total direct cost decreased by \$1732–\$2702/year, sick days decreased for 1 employer group with an estimated increase of \$25,981 in annual productivity.

**Economic outcomes:** Third-party payer experienced overall decline in mean total direct medical costs during each year of follow-up.

**Asthma Management Program:**

**Clinical outcomes:** FEV<sub>1</sub> and severity classification improved significantly. The proportion of patients with an asthma action plan increased from 63% to 99%. Patients with emergency department visits decreased from 9.9% to 1.3%, and hospitalizations from 4.0% to 1.9%. All objective and subjective measures of asthma control improved and were sustained for as long as 5 years. Patients were 6 times less likely to have an emergency department/hospitalization event after program interventions.

**Economic outcomes:** Spending on asthma medications increased; however, asthma-related medical claims decreased, and total asthma-related costs were significantly lower than the projections, based on the study population's historical trends. Direct cost savings averaged \$812/patient/year, and indirect cost savings were estimated at \$1377.60/patient/year. Indirect costs due to missed/nonproductive work days decreased from 10.8 days/year to 2.6 days/year.

**Home Medicine Review (2001–present)**<sup>20,29,32,33,36,52</sup>

**Design:** Multistep assessment interviews with stakeholders, pharmacists, consumers, and facilitators. Focus research group of pharmacists. Mail survey of participating pharmacists.

**Uptake:** *Patients:* 62% of claims are for females, and 74% of claims for age  $\geq$  65.

*Pharmacists:* Of pharmacists in Australia, 13% are accredited. Major motivations for accreditation included professional development and the satisfaction gained from a more active role in consumer care.

**Economic outcomes:** Economic analysis shows cost effectiveness, QALY gains and increasing cost-effectiveness in the future.

**Barriers:** The initial cost of accreditation, rural locations, insufficient remuneration fees for amount of work, lack of consumer awareness, low general practitioner referrals (only 15% of GPs had referred), time constraints for filling out referral forms, uneven quality of pharmacists' home medicine review reports, concern about pharmacists undertaking "medical" work, time to complete pharmacist review (3 hours, 6 minutes), initial cost of accreditation.

TABLE 2 Summary of system evaluations *continued*

### **Inhaled Respiratory Medication Program (2000–present)<sup>26</sup>**

**Design:** Survey of pharmacists.

**Objectives:** To determine community pharmacists' self-reported participation rate, and identify facilitators and barriers to billing for professional fees.

**Uptake:** A total of 39% of surveys were returned. Self-reported billing rates during the 3 months preceding survey were 34% for switching delivery devices, 58% for optimizing spacer device use, 37% for providing follow-up when replacing spacer device.

The percentage of prescriptions estimated to have been billed to the payer (Pharmacare) was 42% ( $\pm 17\%$ ).

**Barriers:** Prescription volume of pharmacy ( $>100/\text{day}$ ), owner/manager vs staff status (financial gain paid to pharmacy; owners also more experienced and confident in providing service), identifying patients in daily practice who require a switch, time-consuming billing process, inadequate fees for service, lack of awareness of program, questioned appropriateness of switching patients with dexterity issues to dry powder metered-dose inhaler vs nebuliser.

### **Pharmaceutical Opinion and Refusal to Dispense (1978–present)<sup>25,40,41</sup>**

**Design:** Three-month survey period.

**Objectives:** To describe factors associated with billing for pharmaceutical opinions and refusal to dispense.

**Uptake:** 1975/3517 respondents (56%); 40% of pharmacist employees and 43.5% of pharmacist owners billed for pharmaceutical opinion during the 3 months. Factors positively associated with billing included 100 to 250 prescriptions/day, the belief that the intervention and its billing are part of good pharmacy practice, the perception that interventions can be billed rapidly, younger age/fewer years in practice, prior attendance at continuing education sessions on refusal/opinion, availability of technical staff to support interventions, and use of decision-support computer programs. Employees were more likely to have billed for refusal to fill than for pharmaceutical opinion.

### **Medicines Use Review and Prescription Interventions (2005–present)<sup>27</sup>**

**Uptake:** From April 2005 to March 2006, total Medicines Use Reviews performed = 14,623. Amount paid in the period = \$7,159,454.

### **Family pharmacy contract (2003–present)<sup>24</sup>**

**Uptake:** By October 2005, 83% (17,790) of pharmacists, 60% of general practitioners (34,000), and 20% (1,400,000) of BARMER Ersatzkasse members joined the trilateral contract.

### **Minor Ailment Service (2006–present)<sup>31</sup>**

**Uptake:** Community pharmacy schemes led to a transfer of up to 40% of general practitioner visits to pharmacists/nurses for minor ailments. A study of the minor ailment service carried out at Keele University found that community pharmacy and practice-based schemes led to a much lower demand on general practitioners by patients to deal with minor conditions.

HRQL = Health-related quality of life; QALY = Quality-adjusted life year.

**Evaluations of discontinued systems:** Outcomes-Based Pharmacists Remuneration Program (2000);<sup>9</sup> Pharmaceutical Care Delivery Demonstration Project (1995–98);<sup>8</sup> Cognitive Activities and Remuneration Effectiveness Project (1994–96);<sup>28,30,35</sup> Home care self-therapy training (1975);<sup>10,12,15</sup> EMIT-based (enzyme-multiplied immunoassay technique) serum analysis and clinical PK service (1980).<sup>14</sup>

needs of the payer, pharmacists, and patients. The role of a single model (professional services only) vs a mixed model (high-level professional services, lower-level professional services, and dispensing services) should be thoroughly explored to ensure participation from all involved parties for sustainability. Third-party payer willingness to pay for clinical care services is crucial to the success of the program. Finally, we need to consider

and focus on the number of patients who require “high-level” service, such as those with multiple comorbidities and risk factors, and determine if matching the right patients with pharmacists with the right skill sets through a referral system would improve patient uptake of the program.

After reviewing over 7000 titles, the benefit of clinical care was evident in the literature. The main issue is conveying these benefits to the

payers, physicians, and the patients to promote demand for such services. Payers, whether government or employers who make decisions on insurance coverage for employees, need to understand the benefits of pharmacist clinical care services prior to committing to support these services. Pharmacists should provide services with proven benefit in a system, similar to the current Canadian health care model, to attract employers and governments for subsidization as part of an employee benefit, exemplified by the Asheville Project. In this model, the employers in Asheville realized the associated cost savings of clinical care and provided comprehensive financial support to pharmacists and patients, leading to eventual cost savings and sustained long-term benefits to patients.<sup>6,7</sup>

During our panel group discussion, it was pointed out that lost productivity due to sickness-related absenteeism is one of the major problems in organizations. Perhaps, though, many employers would be willing to pay for clinical care services if they realized the potential cost savings and the financial edge. A potential increase in employee participation would occur, because the employer is willing to offer clinical care as a benefit, reinforcing its credibility. As more patients become involved in wellness programs, physicians may be more willing to collaborate with pharmacists on patient treatment goals, which would result in better outcomes. Physicians may also be more willing to refer patients to receive clinical care after pharmacists demonstrate their strengths in managing chronic care.

On top of recognizing the benefits pharmacists provide in dispensing medications, stakeholders (patients, payers, physicians, and pharmacists) also need to recognize the benefits of clinical care in order to generate the demand for these innovative services, and so encourage third-party reimbursement. Stakeholder recognition could be improved by increasing the marketing of clinical care, such as conveying to stakeholders the cost savings and improvements in quality of life. These crucial but underutilized strategies can help to encourage third-party reimbursement for clinical care.

### Recommendations

The literature review and our panel group discussion resulted in 5 recommendations for implementing clinical care programs in the current pharmacy practice environment in Canada:

1. Develop a payment schedule that provides adequate remuneration commensurate with the value of the service provided.

*Rationale:* Previous systems have provided

inadequate remuneration for system feasibility and sustainability. Any remuneration system should be based on a comprehensive business model to ensure its viability.

2. Develop a plan to improve uptake by addressing key barriers (e.g., comprehensive training and support programs for pharmacists).

*Rationale:* Most systems had low intervention rates.

3. Evaluate the remuneration system for economic and patient outcomes after it is established.

*Rationale:* Only one-half of the programs were evaluated; often, this evaluation lacks the qualitative input that generates suggestions for future systems.

4. Develop a communication strategy to disseminate the program and its goals to pharmacists and other health care professionals, as well as third-party payers.

*Rationale:* Successful implementation of a new program depends on involving all participants.

5. Once a remuneration system is developed, launch a marketing campaign based on benefits of services to engage stakeholders (i.e., patient groups, regional health authorities, physicians, and other health professionals) to communicate the benefits of pharmacist care and to assist in establishing demand for these services.

### Conclusion

Remuneration for pharmacist clinical care is still a relatively new concept, without long-standing history and with few models to act as guiding frameworks for implementing and providing reimbursement for a clinical care program. Even with models in place, the geographic locations and settings differ, thus requiring program characteristics to meet health care priorities within that particular jurisdiction and population. Only with ongoing monitoring and evaluation can we ensure that the program has the optimal characteristics suited to meet the needs of and to improve health outcomes for patients. ■

---

*From the EPICORE Centre/COMPRIS, University of Alberta (Chan, Bougher, Wilgosh, Tsuyuki), Edmonton; the Faculty of Pharmaceutical Sciences, University of British Columbia (Grindrod), Vancouver, BC; the Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta (Chan, Pasutto, Tsuyuki), Edmonton; and the Alberta College of Pharmacists (Eberhart), Edmonton, Alberta. Contact Ross Tsuyuki at [ross.tsuyuki@ualberta.ca](mailto:ross.tsuyuki@ualberta.ca).*

**Acknowledgements:** We would like to thank Marlene Dorgan from the University of Alberta Library for her assistance in preparing our search strategy. We would also like to thank Karen Smilski, Andrea Nagle, and Glenn Monteith from Alberta Health and Wellness for their participation in our panel discussion.

---

## References

1. Jones EJ, MacKinnon NJ, Tsuyuki RT. Pharmaceutical care in community pharmacies: practice and research in Canada. *Ann Pharmacother* 2005;39:1527-33.
2. Tsuyuki RT, Johnson JA, Teo KK, et al. A randomized trial of the effect of community pharmacist intervention on cholesterol risk management. *Arch Intern Med* 2002;162:1149-55.
3. Tsuyuki RT, Olson KL, Dubyk AM, et al. Effect of community pharmacist intervention on cholesterol levels in patients at high risk of cardiovascular events: the second study of cardiovascular risk intervention by pharmacists (SCRIP-plus). *Am J Med* 2004;116:130-3.
4. Roughead L, Semple S, Vitry A. The value of pharmacist professional services in the community setting: a systematic review of the literature 1990-2002. Australia: University of South Australia; 2002. p. 1-202. Available: [www.beta.guild.org.au/uploadedfiles/Research\\_and\\_Development\\_Grants\\_Program/Projects/2002-507\\_fr.pdf](http://www.beta.guild.org.au/uploadedfiles/Research_and_Development_Grants_Program/Projects/2002-507_fr.pdf) (accessed April 23, 2007).
5. Centers for Medicare and Medicaid Services. Covered medical and other health services. In: Medicare Benefit Policy Manual; 2006;93-9. Available: [www.cms.hhs.gov/manuals/Downloads/bp102c15.pdf](http://www.cms.hhs.gov/manuals/Downloads/bp102c15.pdf) (accessed September 12, 2007).
6. Cranor CW, Bunting BA, Christensen DB. The Asheville Project: long-term clinical and economic outcomes of a community pharmacy diabetes care program. *J Am Pharm Assoc* 2003;43:173-84.
7. Cranor CW, Christensen DB. The Asheville Project: short-term outcomes of a community pharmacy diabetes care program. *J Am Pharm Assoc* 2003;43:149-59.
8. Impact of pharmaceutical care delivered in the community pharmacy setting: results of a two year demonstration projects. *Iowa Pharmacist* 2000;55:18-24.
9. Farris KB, Kumbera P, Halterman T, Fang G. Outcomes-based pharmacist reimbursement: reimbursing pharmacists for cognitive services. *J Manag Care Pharm* 2002;8:383-93.
10. Fudge RP, Latiolais CJ. Blue Cross pays for clinical pharmacist services in training hemophiliacs for home care self-therapy. *Pharm Times* 1976;42:36-41.
11. Maddox RR, Vanderveen TW, Jones M, et al. Collaborative clinical pharmacokinetic services. *Am J Hosp Pharm* 1981;38:524-9.
12. Pathak DS, Nold EG. Cost-effectiveness of clinical pharmaceutical services: a follow-up report. *Am J Hosp Pharm* 1979;36:1527-9.
13. Patterson LE, Huether RJ. Reimbursement for clinical pharmaceutical services. *Am J Hosp Pharm* 1978;35:1373-5.
14. Robinson JD. Pharmacokinetics service for ambulatory patients. *Am J Hosp Pharm* 1981;38:1713-6.
15. Schad R, Schneider PJ, Nold EG. Reimbursable pharmacy teaching program for adrenalectomy patients. *Am J Hosp Pharm* 1979;36:1212-4.
16. Akaho E, Armstrong EP, Fujii M. Pharmaceutical care innovations in Japan. *J Am Pharm Assoc* 1996;NS36:123-7.
17. Akaho E, MacLaughlin EJ, Takeuchi Y. Comparison of prescription reimbursement methodologies in Japan and the United States. *J Am Pharm Assoc* 2003;43:519-26.
18. Armstrong EP, Akaho E, Fujii M. Japanese pharmacy: innovation mixed with tradition. *Ann Pharmacother* 1995;29:181-5.
19. BCMH announces two new MTMS opportunities. Ohio State Board of Pharmacy News. Feb 2006. Available: [www.pharmacy.ohio.gov/sbn2006-02-all.htm](http://www.pharmacy.ohio.gov/sbn2006-02-all.htm) (accessed November 13, 2006).
20. Australian Association of Consultant Pharmacy. The facts on accreditation and remuneration for medication reviews. Australia: Australian Association of Consultant Pharmacy; 2006. p. 1-2. Available: [www.aacp.com.au](http://www.aacp.com.au) (accessed August 20, 2006).
21. Carter BL, Chrischilles EA, Scholz D, et al. Extent of services provided by pharmacists in the Iowa Medicaid pharmaceutical case management program. *J Am Pharm Assoc* 2003;43:24-33.
22. Thompson CA. Minnesota pharmacists use CPT codes. *Am J Health Syst Pharm* 2006;63:1208-10.
23. Centers for Disease Control and Prevention. State-based diabetes prevention & control programs. Available: [www.cdc.gov/DIABETES/states](http://www.cdc.gov/DIABETES/states) (accessed August 11, 2006).
24. Eickhoff C, Schulz M. Pharmaceutical care in community pharmacies: practice and research in Germany. *Ann Pharmacother* 2006;40:729-35.
25. Kroger E, Moisan J, Gregoire J. Billing for cognitive services: understanding Quebec pharmacists' behavior. *Ann Pharmacother* 2000;34:309-16.
26. Murphy AL, MacKinnon NJ, Flanagan PS, et al. Pharmacists' participation in an inhaled respiratory medication program: reimbursement of professional fees. *Ann Pharmacother* 2005;39:655-61.
27. Pharmaceutical Services Negotiating Committee. The new contract for community pharmacy: a funding reference guide 2005. Bucks, England: Pharmaceutical Services Negotiating Committee; 2005. Special Edition:1-24. Available: [www.psn.org.uk/index.php](http://www.psn.org.uk/index.php) (accessed June 14, 2006).
28. Christensen DB, Holmes G, Fassett WE, et al. Influence of a financial incentive on cognitive services: CARE project design/implementation. *J Am Pharm Assoc* 1999;39:629-39.
29. Urbis Keys Young. Evaluation of the home medicines review program (Pharmacy Component): final report. Prepared for the Pharmacy Guild of Australia. June 2005. Available: [www.guild.org.au/uploadedfiles/Medication\\_Management\\_Reviews/Overview/Urbis%20Keys%20Young%20](http://www.guild.org.au/uploadedfiles/Medication_Management_Reviews/Overview/Urbis%20Keys%20Young%20)

- 20evaluation.pdf (accessed October 3, 2007).
30. Smith DH, Fassett WE, Christensen DB. Washington State CARE project: downstream cost changes associated with the provision of cognitive services by pharmacists. *J Am Pharm Assoc* 1999;39:650-7.
  31. National Health Service Scotland. Community pharmacy. Available: [www.communitypharmacy.scot.nhs.uk/documentation.html](http://www.communitypharmacy.scot.nhs.uk/documentation.html) (accessed April 23, 2007).
  32. Australian Government. Department of Health and Ageing. Medication management reviews. Available: [www.health.gov.au/internet/wcms/publishing.nsf/Content/Medication+Management+Reviews](http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Medication+Management+Reviews) (accessed November 13, 2006).
  33. Australian Government. Medicare Australia. Home Medicines Review. Available: [www.medicareaustralia.gov.au/providers/incentives\\_allowances/pharmacy\\_agreement/hmr.htm](http://www.medicareaustralia.gov.au/providers/incentives_allowances/pharmacy_agreement/hmr.htm) (accessed November 13, 2006).
  34. Chrischilles EA, Carter BL, Lund BC, et al. Evaluation of the Iowa Medicaid pharmaceutical case management program. *J Am Pharm Assoc* 2004;44:337-49.
  35. Christensen DB, Holmes G, Fassett WE, et al. Principal findings from the Washington State cognitive services demonstration project. *Manag Care Interface* 1998;11:60-2.
  36. The Pharmacy Guild of Australia. About home medicines review. Available: [www.beta.guild.org.au/mmr/content.asp?id=53](http://www.beta.guild.org.au/mmr/content.asp?id=53) (accessed August 20, 2006).
  37. McDonald S, Lopatka H, Bachynsky J, Kirwin D. Systematic review of pharmacy reimbursement literature. Working Paper. *Institute of Health Economics*; 1999:99-4:1-63.
  38. DaVanzo J, Dobson A, Koenig L, Book R. Medication therapy management services: a critical review. *J Am Pharm Assoc* 2005;45:580-7.
  39. American Academy of Managed Care Pharmacy. Sound medication therapy management programs: 2006 consensus document. Alexandria (VA). Available: [www.amcp.org/amcp.ark?p=AA8CD7EC](http://www.amcp.org/amcp.ark?p=AA8CD7EC) (accessed October 3, 2007).
  40. Poirier S. Reimbursement for cognitive services: Quebec's experience. *Am Pharm* 1992;NS32:432-60.
  41. Poirier S, Garipey Y. Compensation in Canada for resolving drug-related problems. *J Am Pharm Assoc* 1996;NS36:117-22.
  42. Poirier S, Buffington DE, Memoli GA. Billing third-party payers for pharmaceutical care services. *J Am Pharm Assoc* 1999;39:50-64.
  43. Chang ZG, Kennedy DT, Holdford D, Small RE. Payment for pharmaceutical services. *Virginia Pharmacist* 2000;84:11-6.
  44. Young D. Promising results revealed in Mississippi disease management program. *AM J Health Syst Pharm* 2003;60:1720-4.
  45. Mississippi Division of Medicaid. Chapter 7. Disease management services. In: Mississippi Division of Medicaid Pharmacy Manual. Mississippi Division of Medicaid; 2006: 7-1-7-56.
  46. Anonymous. Medicaid to pay Mississippi pharmacists for disease management. *Am J Health Syst Pharm* 1998;55:1238-9.
  47. Young D. Pharmaceutical case management helps Iowa Medicaid patients. *AM J Health Syst Pharm* 2003;60:414-6.
  48. Bunting BA, Cranor CW. The Asheville project: long-term clinical, humanistic, and economic outcomes of a community-based medication therapy management program for asthma. *J Am Pharm Assoc* 2006;46:133-47.
  49. Moore K. Getting paid: billing Medicare for diabetes self-management training. *Fam Pract Manag* 2002;9(6):18.
  50. Reynolds B. Ohio health agency ties MTM services to new CPT codes. American Pharmacists Association. Available: [www.pharmacist.com/AM/PrinterTemplate.cfm?Section=Search1&template=/CM/HTMLDisplay.cfm&ContentID=8638](http://www.pharmacist.com/AM/PrinterTemplate.cfm?Section=Search1&template=/CM/HTMLDisplay.cfm&ContentID=8638) (accessed January 29, 2008).
  51. Vogenberg FR, Hull S. Coding for medication therapy management services. *J AHIMA* 2006;77:74-9.
  52. Benrimoj S, Roberts AS. Providing patient care in community pharmacies in Australia. *Ann Pharmacother* 2005;39:1911-7.
  53. Guignard E, Bugnon O. Pharmaceutical care in community pharmacies: practice and research in Switzerland. *Ann Pharmacother* 2006;40:512-7.
  54. Tomechko MA, Strand LM, Morley PC, Cipolle RJ. Q and A from the pharmaceutical care project in Minnesota. *Am Pharm* 1995;NS35:30-9.
  55. Minnesota Department of Human Services. MHCP Provider Update PRX-06-02R. Available: [www.dhs.state.mn.us/main/groups/business\\_partners/documents/pub/dhs\\_id\\_055325.hcsp](http://www.dhs.state.mn.us/main/groups/business_partners/documents/pub/dhs_id_055325.hcsp) (accessed August 4, 2006).