Paying pharmacists for patient care: A systematic review of remunerated pharmacy clinical care services

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ABSTRACT

Background: Expansion of scope of practice and diminishing revenues from dispensing are requiring pharmacists to increasingly adopt clinical care services into their practices. Pharmacists must be able to receive payment in order for provision of clinical care to be sustainable. The objective of this study is to update a previous systematic review by identifying remunerated pharmacist clinical care programs worldwide and reporting on uptake and patient care outcomes observed as a result.

Methods: Literature searches were performed in several databases, including MEDLINE, Embase and International Pharmaceutical Abstracts, for papers referencing remuneration, pharmacy and cognitive services. Searches of the grey literature and Internet were also conducted. Papers and programs were identified up to December 2012 and were included if they were not reported in our previous review. One author performed data abstraction, which was independently reviewed by a second author. All results are presented descriptively.

Results: Sixty new remunerated programs were identified across Canada, the United States, Europe, Australia and New Zealand, ranging in complexity from emergency contraception counseling to minor ailments schemes and comprehensive medication management. In North America, the average fee provided for a medication review is $68.86 (all figures are given in Canadian dollars), with $23.37 offered for a follow-up visit and $15.16 for prescription adaptations. Time-dependent fees were reimbursed at $93.60 per hour on average. Few programs evaluated uptake and outcomes of these services but, when available, indicated slow uptake but improved chronic disease markers and cost savings.

Discussion: Remuneration for pharmacists' clinical care services is highly variable, with few programs reporting program outcomes. Programs and pharmacists are encouraged to examine the time required to perform these activities and the outcomes achieved to ensure that fees are adequate to sustain these patient care activities. *Can Pharm J (Ott)* 2014;147:209-232.

With the changing pharmacy practice landscape, the provision of (and billing for) clinical services is becoming increasingly important. We conducted this research to provide a complete picture of remuneration programs in place for these services worldwide, to serve as an update to previous work published in 2008.

Avec l'évolution du contexte d'exercice de la pharmacie, la prestation de services cliniques, et la facturation de ces services, prennent de plus en plus d'importance. Nous avons mené cette étude pour brosser un tableau complet des programmes de rémunération qui sont offerts pour de tels services, à l'échelle mondiale, et ainsi mettre à jour les conclusions d'une étude précédente publiée en 2008.

Introduction

Since the first definition of pharmaceutical care was published over 20 years ago,[1] the pharmacy profession has aimed to transition from a distributive focus to a patient care focus. In particular, the past decade has seen a significant expansion of the pharmacists' role through the implementation of services such as minor ailments schemes, prescribing, medication therapy management programs and the authorization to administer drugs and vaccines by injection. The implementation of the MedsCheck program in Ontario and the Medicare Part D Medication Therapy Management Program in the United

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KNOWLEDGE INTO PRACTICE

- Eligibility criteria, program requirements and fees offered for clinical services are highly variable across jurisdictions.
- Few programs collect data on the uptake, time required, clinical effectiveness and economic outcomes of these services—an important piece in demonstrating return on investment.
- Pharmacists are encouraged to take advantage of billing opportunities available to demonstrate the need for such services and to advocate for the need to collect patient and health system outcomes concurrently.

States are 2 recent examples of government programs remunerating pharmacists for clinical activities in North America.

The Blueprint for Pharmacy, a Canadian strategy for improving the provision of patient-centred care by pharmacists, identifies obtaining remuneration for professional services as a key area of action to support such activities.[2] Indeed, lack of remuneration for services has been cited by community pharmacists as a key barrier preventing the greater provision of clinical services.[3,4] As the pharmacy practice literature reporting the clinical benefits of pharmacist cognitive services continues to grow[5,6] and pharmacy revenues from dispensing alone decrease in light of generic drug price reductions and other factors, the profession is advocating for appropriate payment for clinical services.

A systematic review published by members of our group in 2008 identified 28 programs worldwide wherein pharmacists received remuneration for clinical care services, most often funded by government payers.[7] Medication therapy management, a type of clinical care service defined as a medication review with resolution of drug-related problems, was the most common remunerated service, ranging from $27 to $170 depending on the number of problems resolved and the time spent, among other factors. While only 14 of these programs reported clinical or economic outcomes, these services were consistently associated with improved chronic disease control and cost-effectiveness. Since the publication of the original review, many additional remuneration systems have been developed, implemented and evaluated. This article therefore aims to serve as an update to the previous publication, presenting the current status of pharmacist remuneration for clinical care activities worldwide.

Methods

The QUORUM process for the conduct and reporting of systematic reviews was followed.[8] As with the previous review, 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 that could be delegated to a typical Canadian pharmacy technician with basic training."[7] The provision of routine medication counseling upon dispensing was excluded from this review, as was routine clozapine monitoring without intervention or care plan development and the administration of drugs or vaccines by injection, which has been reported separately.[9]

In consultation with a medical librarian, we performed searches in Ovid MEDLINE, Ovid Embase, International Pharmaceutical Abstracts, the Cochrane Library, EconLIT, Scopus and Web of Science. The searches combined relevant keywords and subject headings (when available), including *fees*, *reimbursement*, *community pharmacy services*, *medication therapy management*, *pharmaceutical care* and *direct patient care*, among others. The complete search strategy can be obtained from the authors on request. The search strategy was derived from that employed in the 2008 review by Chan et al.,[7] but expanded the number of terms used with regard to specific types of cognitive services offered, including home visits and medication therapy management. Explosion of subject headings, adjacency searching and truncation of terms were used where appropriate. The Ovid searches were peer-reviewed by a second health sciences librarian to ensure accuracy and comprehensiveness. To identify additional relevant articles, the bibliographies of included studies were manually reviewed and tables of contents for pharmacy practice journals were reviewed for additional citations.

Grey literature searches were conducted using the same search terms in the Web of Science Conference Proceedings Citation Index and ProQuest Dissertations and Theses. Following the identification of articles and grey literature, comprehensive online searches were performed to seek additional information on programs described in the citations identified and to identify additional programs not reported in the literature. Online searches encompassed accessing websites of governments and regional

pharmacy associations for each province and state in Canada and the United States, Australia and Europe. The search engine Google was then used to identify any additional programs, incorporating the same search terms as applied to the database searches.

Citations were identified up to December 2012 and were included if they described remuneration programs for pharmacist clinical care services in any setting and were not included in the previous review. Included articles had to be published in English and had to report on a program where remuneration for these services was provided by a third-party payer such as a government, employer or insurance plan and must be separate from dispensing fees. Programs or services paid for directly by patients were excluded, as were programs that existed solely within the context of a funded research study or pilot project, or involved fewer than 3 pharmacies. We used this approach to focus on the long-term support of pharmacists' clinical care services from a broad health care system perspective, rather than through individual pharmacy contracts with private insurers or patients or through short-term demonstration projects.

Two authors independently screened titles and abstracts for inclusion. Disagreement was resolved by discussion and consensus. Data extraction was performed by one author and then independently verified by a second author. To facilitate comparison, all reported remuneration amounts and cost outcomes were converted to Canadian dollars using the Bank of Canada currency conversion rates as of September 16, 2013. Due to expected heterogeneity in this subject area and among different health systems, data were collected descriptively.

Results

As reported in Appendix 1 (available online at cph.sagepub.com/supplemental), 33 articles and 85 web resources describing 60 programs met our inclusion criteria and are therefore included in this review. Programs were identified across Canada, the United States, Europe, Australia and New Zealand, ranging in complexity from emergency contraception counseling to minor ailments schemes and comprehensive medication management. While many programs operate at a regional level, nationwide programs exist in all countries with the exception of Canada.

MISE EN PRATIQUE DES CONNAISSANCES

- Les critères d'admissibilité, les exigences des programmes et les honoraires versés pour les services cliniques varient considérablement d'un endroit à l'autre.
- Peu de programmes compilent des données sur l'utilisation, l'efficacité clinique et le rendement économique de ces services, ou sur le temps qu'ils requièrent – des données pourtant importantes pour établir le rendement du capital investi.
- Nous encourageons les pharmaciens à tirer profit des possibilités de facturation qui s'offrent pour faire valoir le bien-fondé de ces services, ainsi qu'à insister sur la nécessité de recueillir parallèlement des données sur les effets de ces services sur les patients et sur le système de soins de santé.

The identified programs and associated fees, with information on patient eligibility criteria, payers, implementation dates and additional pharmacist training requirements, are presented in Table 1. Additional remuneration programs identified, but lacking information on fee amounts, are presented in Table 2.

Payers

The majority (73%) of remunerated clinical care services identified are paid for by government agencies, with the remainder funded by private insurance plans. All third-party–funded programs, with the exception of the General Motors smoking cessation program in Canada, were based in the United States.

Types of service and remuneration schedules

The most common remunerated service identified was for completion of a medication review with or without care plan development, with 38 programs identified. Of these, 18 had limitations on the patients who qualified for the service, described in Table 3. The average fee in North America for a medication review—determined by taking the flat fee offered for medication reviews where applicable, or assuming a 30-minute duration for those where payment was time dependent—is $68.86 (SD $27.42) and pharmacists are eligible for, on average, $23.37 (SD $6.80) for performing a follow-up visit after the completion of a medication review. (All figures are given in Canadian dollars.) North American programs were selected specifically for this determination since pharmacist wages and, therefore, fees provided were more likely to be comparable.

TABLE 1 Pharmacist clinical care remuneration programs

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
Canada						
Pharmacy Services Compensation Program[10-12]	2012	Alberta (AB)	Government of Alberta	Comprehensive Annual Care Plan (CACP)	AB resident. Two or more chronic diseases (HTN, DM, COPD, asthma, HF, IHD, mental health disorder) and 1 other risk factor (tobacco use, obesity, addiction)	$100 or $125 if pharmacist has Additional Prescribing Authorization (APA)
				Standard Medication Management Assessment (SMMA)	AB resident. One or more chronic disease(s) and on ≥3 prescription drugs	$60 or $75 if pharmacist has APA
				CACP or SMMA follow-up	AB resident with CACP or SMMA completed. Require follow-up based on pharmacist assessment of need, physician referral or recent hospitalization	$20 or $25 if pharmacist has APA
				Prescription adaptation (alteration of dosage or regimen, therapeutic substitution, prescription renewal or emergency prescribing)	AB resident	$20
				Initiation of therapy (pharmacist must have APA)		$25
PharmaCare Clinical Services Plan[13]	2011	British Columbia (BC)	Government of British Columbia	Medication Review—Standard	BC resident. On ≥5 different medications and with clinical need.	$60
				Medication Review—Pharmacist Consultation (includes resolution of DRPs identified)		$70
				Renewal or changing of dose, formulation or regimen	BC resident	$10
				Therapeutic substitution		$17.20
				Emergency contraception counseling		$15
				Refusal to fill		2× usual dispensing fee
PharmaCheck[14]	2012	New Brunswick (NB)	New Brunswick Prescription Drug Program	PharmaCheck (20- to 30-minute medication review)	NB resident on the Plan A (senior) program. On ≥3 chronic prescription drugs.	$52.50

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
Medication Review, Medication Management and Refusal to Fill[15-17]	2012	Newfoundland and Labrador (NL)	Newfoundland and Labrador Prescription Drug Program	Medication Review (minimum duration 20-30 minutes)	NL Prescription Drug Program beneficiary	$52.50
				Refusal to fill		$21.80
				Medication management (interim supply, extending prescription, adaptation of dosage form/ regimen/quantity, completion of missing information or nonformulary generic substitution)		$10.90
Pharmacare Insured Professional Services[18]	2011	Nova Scotia (NS)	Government of Nova Scotia	Advanced Medication Review Service	NS resident, beneficiary of seniors' Pharmacare program. Have ≥1 chronic disease and be on ≥4 prescription medications (or 1 high-risk drug). Not residing in nursing home or care facility and not receiving compliance packaging	$150
				Basic Medication Review Service	NS resident on ≥3 chronic prescription medications	$52.50
				Therapeutic substitution	NS resident	$26.25
				Prescription adaptation (includes alteration or refusal to fill)		$14
MedsCheck[19]	2007	Ontario (ON)	Ontario Ministry of Health and Long-Term Care	MedsCheck	ON resident on ≥3 prescription medications for a chronic condition	$60
				MedsCheck for Diabetes	ON resident with type I or II diabetes	$75
				MedsCheck at Home	As for MedsCheck, but for home-bound patients	$150
				MedsCheck LTC	As for MedsCheck, but for patients residing in long-term care facilities	$90 for annual interdisciplinary review, $50 for quarterly follow-ups
				MedsCheck Follow-Up	Patients already receiving a MedsCheck but requiring a second one due to hospitalization, referral from physician or nurse or pharmacist assessment of need	$25

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
Pharmaceutical Opinion Program[20]	2011			Pharmaceutical Opinion (identification of DRP and recommendation to prescriber)	ON resident receiving provincial drug benefits (seniors, social services)	$15
Pharmacy Smoking Cessation Program[21]				Readiness assessment and first consultation		$40
				Primary follow-up (first 3 follow-up sessions)		$15
				Secondary follow-up (follow-up sessions 4-7 within 1 year of first consultation)		$10
ColonCancerCheck[22]	2008			ColonCancerCheck (provision of FOBT kit and referral of those with positive results)	ON resident. Ages 50-74 years without a primary care provider and without symptoms indicative of colon cancer. Has not had colonoscopy in past 10 years or completed FOBT in past 2 years.	$7
Pharmacy Services Compensation Program[23]	2012	Saskatchewan (SK)	Saskatchewan Ministry of Health	Medication Assessment	SK resident receiving home care or mental health services, living in own home and receiving compliance packaging	$60
				Emergency contraception counseling	SK resident	2× usual dispensing fee
				Refusal to dispense		1.5× usual dispensing fee
				Seamless care (medication reconciliation within 1 week of discharge)		1.5× usual dispensing fee
				Minor ailments program (acne, cold sores, insect bites, allergic rhinitis, diaper dermatitis, oral aphthous ulcers, oral thrush)		$18
				Adaptation (dosage form, interim supply, continuing existing supply)		$6
				Emergency extension		$10
				Prescription alteration because of missing information		$6
Partnership to Assist with Cessation of Tobacco (PACT)[24]	2009			Smoking cessation counseling		$2 per minute

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
General Motors Smoking Cessation Program[25]	2006	Multiple provinces	General Motors Canada Limited	Smoking cessation counseling (initial assessment and 6 follow-up visits over 6 months)	General Motors Canada Limited health plan enrollees, retirees and their dependents who smoke	$115
United States						
Alaska Medicaid Program[26]	2011	Alaska	State of Alaska Department of Health and Social Services	Tobacco cessation counseling	Alaska Medicaid beneficiaries	$19.84
Alameda Alliance for Health CompleteCare MTM Program[27]	2008	California	Alameda Alliance for Health CompleteCare	Comprehensive medication review	Alameda Alliance for Health CompleteCare members	$76.70
				Prescriber consultation (cost efficacy or DTP management)		$20.45
				Patient compliance consultation		$20.45
				Patient education and monitoring		$10.23
Health Plan of San Joaquin Pharmacy Cognitive Services Compensation Program[28]	2009	California	Health Plan of San Joaquin	Nonformulary to formulary change	Health Plan of San Joaquin beneficiary	$5.11
				Extended education		$10.23
				Contacting a prescriber		$20.45
Health Plan of San Mateo Medication Therapy Management Program[29]	2006	California	Health Plan of San Mateo	Comprehensive medication review	Subgroup of Health Plan of San Mateo members (not specified)	$76.70
				Prescriber consultation (cost efficacy or DTP management)		$20.45
				Patient compliance consultation		$20.45
				Patient education and monitoring		$10.23
Partnership Healthplan of California Medication Therapy Management Program[30]	2007	California	Partnership Healthplan of California	Comprehensive medication review	Subgroup of Partnership Healthplan of California Medicare Advantage Plan members (not specified)	$51.13
				Prescriber consultation		$20.45
				Patient compliance consultations		$20.45
				Patient education and monitoring		$10.23
Rx Review Program[31-34]	2007	Colorado	Colorado Department of Health Care Policy and Financing (Medicaid)	Medication review	Colorado Medicaid beneficiaries on ≥5 medications over 3 consecutive months	$76.70 if face-to-face, $51.13 if via telephone

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
Florida Medicaid Program[35,36]	2004	Florida	Florida Agency for Health Care Administration (Medicaid)	Comprehensive medication review	Florida Medicaid beneficiaries	$51.13
				Identification and management of quality-related events		$20.45 if prescriber consultation required, $15.34 if patient not compliant
				Patient education and monitoring (includes follow-up call after dispensing)		$10.23
Smoking Cessation Treatment Services[37]	1999	Indiana	Indiana Medicaid	Smoking cessation counseling	Indiana Medicaid beneficiaries	$22.58 per 15 minutes
CarePro Health Services MTM Program[38]	1999	Iowa	CarePro Health Services	Comprehensive medication review	CarePro plan members	$51.73
				Prescriber consultation		$20.45
				Patient compliance consultation		$20.45
				Patient education and monitoring		$10.23
City of Ames Medication Therapy Management Program[39]	2000	Iowa	City of Ames	Comprehensive medication review	City of Ames members	$76.70
				Prescriber consultation (cost efficacy or DTP management)		$20.45
				Patient compliance consultation		$20.45
				Patient education and monitoring		$10.23
Pharmacists Mutual Insurance Companies MTM Program[40]	2004	Iowa	Pharmacists Mutual Insurance	Comprehensive medication review	Pharmacists Mutual employees and health plan members	$51.50
				Prescriber consultation		$20.45
				Patient compliance consultation		$20.45
				Patient education and monitoring		$10.23
Iowa Priority Prescription Program[41,42]	2002	Iowa	Iowa Department of Public Health	Brown bag medication review	Medicare-eligible Iowans with no insured drug benefit and not enrolled in Medicaid	$25.57
Diabetes Self-Management Training[43,44]	2011	Louisiana	Louisiana Department of Health and Hospitals (Medicaid)	Diabetes self-management training	Medicaid beneficiaries with diabetes and 1 of the following: newly diagnosed, pregnant, not yet received diabetes education, HbA1c >7, severe hypo- or hyperglycemia in past 12 months, diagnosis of complication or comorbidity or new order for insulin pump	$50.31 per 30 minutes of individual education, $13.53 per patient per 30 minutes for group education

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
Maryland Patients, Pharmacists, Partnerships (P^3) Program[45-47]	NA	Maryland	Six Maryland self-insured employers (not specified)	Diabetes management	Insurance program enrollees and their dependents with diabetes	Varies by employer, averages $2.05 per minute[a]
Priority Health Medication Therapy Management Program[48]	2010	Michigan	Priority Health	Comprehensive medication review	Priority Health members	$76.70
				Prescriber consultation (cost efficacy or DTP management)		$20.45
				Patient compliance consultation		$20.45
				Patient education and monitoring		$10.23
Medicaid Medication Therapy Management Program[49-53]	2006	Minnesota	Minnesota Department of Human Services (Medicaid)	Medication therapy management	Outpatient, not eligible for Medicare Part D, taking ≥3 prescriptions for ≥1 chronic condition(s)	$53.18 for first 15 minutes of first encounter, $34.77 for first 15 minutes of follow-up encounter and $24.54 per additional 15-minute increments for either first or follow-up encounters
HealthPartners RxCheckup[53,54]	2008	Minnesota	HealthPartners	Medication therapy management (face-to-face)	HealthPartners employees, Medicare members with HealthPartners prescription drug coverage and beneficiaries of the Minnesota General Assistance Medical Care, Medical Assistance, MinnesotaCare, Minnesota Senior Health Options and Minnesota Senior Care programs	Up to $153.41 for planning, initial visit and follow-up
Missouri Medicaid Disease State Management Program[34]	2002	Missouri	Missouri Medicaid	Initial assessment	Missouri Medicaid beneficiaries with asthma, DM, HF or depression	$76.70
				New problem assessment		$40.91 for initial assessment and per follow-up
				Preventative follow-up assessment		$25.57
MO HealthNet Medication Therapy Management[55]	2008 (ended 2010)	Missouri	MO HealthNet (Medicaid provider)	Medication therapy management	Missouri Medicaid beneficiary with ≥1 of the following: asthma, COPD, DM, CVD, GERD or sickle cell anemia	$51.13 for first 15 minutes of initial visit, $10.23 for first 15 minutes of a follow-up visit, $5.11 for each additional 15 minutes for either initial or follow-up visits

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
PharmAssist Program[35,56,57]	NA	Montana	State of Montana Department of Public Health and Human Services	Medication therapy management	Montana resident	$51.13 for first 15 minutes of initial encounter, $25.57 for additional 15-minute increments at either initial encounter or follow-up encounters
Pharmacist tobacco cessation counseling program[58,59]	2008	Nebraska	Nebraska Medicaid	Smoking cessation counseling (must be ordered by primary care provider)	Nebraska Medicaid beneficiary age ≥18 and participating in Tobacco Free Quitline	$13.49 for visit of ≤10 minutes or $23.13 for visit lasting >10 minutes
New York Medication Therapy Management Program[60]		New York	New York Medicaid	Medication therapy management	NA	$35.79 initial consultation, $25.57 follow-up consultation
ChecKmeds Program[61-63]	2007 (ended 2011)	North Carolina (NC)	State of North Carolina	Comprehensive medication review	NC resident age ≥65, part of Medicare Prescription Drug Plan	$51.13
				Prescriber consultation (cost efficacy of DTP management)		$20.45
				Patient compliance consultation		$20.45
				Patient education and monitoring		$10.23
Focused Risk Management (FORM) Program[64-66]	2006		North Carolina Department of Health and Human Services	Medication therapy management	NC Medicaid beneficiary age ≥21 and taking ≥11 medications per month. Must live in own home.	$30.68 per patient per 3 months
Smoking and Tobacco Cessation Counseling for Pregnant Women Program[67,68]	2012	North Dakota (ND)	North Dakota Medicaid	Smoking and tobacco cessation counseling	ND Medicaid beneficiaries who are pregnant or up to 60 days postpartum	$18.97 for counseling ≤10 minutes' duration, $35.71 for counseling >10 minutes
Oregon Medication Therapy Management[69-77]	NA	Oregon	Oregon Medicaid	Medication therapy management	Oregon Medicaid beneficiaries	$28.86 for first 15 minutes of initial encounter and $13.47 for each 15 minutes thereafter, $26.94 for first 15 minutes of follow-up and $13.47 for each 15 minutes thereafter
Tobacco Cessation Services[78]	2002	Pennsylvania (PA)	Pennsylvania Department of Public Welfare	Tobacco cessation counseling	PA Medical Assistance recipient	$15.34 per 15-minute increment

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
HealthSpring and John Deere MTM Program[79]	NA	Tennessee	HealthSpring and John Deere Health Care programs	Comprehensive medication review	All HealthSpring Medicare Prescription Drug Plan members and a subgroup of John Deere Health Care members (not specified)	$51.13
				Prescriber consultation		$20.45
				Patient compliance consultation		
				Patient education and monitoring		$10.23
Scott & White Health Plan[80,81]	NA	Texas	Scott & White Health Plan	Diabetes medication management	Enrollees with DM and HbA1c >7.5%	$107.38 for initial visit, $56.25 for follow-up visits
Washington Medicaid Prescription Drug Program[82]	NA	Washington	Washington Medicaid	Emergency contraception counseling	Washington Medicaid enrollees	$13.81
Face to Face (F2F) Diabetes Program[83]	2010	West Virginia	West Virginia Public Employees Insurance Agency	Diabetes assessment	Plan members with DM (including secondary causes of DM or gestational DM)	$51.13 initial assessment, $20.45 per 15 minutes for follow-up assessments
Medication Therapy Management and Intervention-Based Services[84-86]	2012	Wisconsin	Wisconsin Medicaid and BadgerCare	Comprehensive medication reviews and assessments	Medicaid, BadgerCare, SeniorCare, Program for All-Inclusive Care for the Elderly and FamilyCare program beneficiaries with 1 or more of the following: taking ≥4 medications for ≥2 chronic conditions, DM, multiple prescribers, recent discharge from hospital or care facility, health literacy issues, referral from physician	$76.70 for initial review, $35.79 for follow-up
				Cost-effectiveness intervention	Medicaid, BadgerCare, SeniorCare, Program for All Inclusive Care of the Elderly and FamilyCare program beneficiaries	$30.68
				Change in dose, dosage form or duration		
				Focused adherence consultation		
				Medication addition or deletion		
				Medication device instruction		
Wisconsin Medicaid Pharmaceutical Care Program[87-89]	1996 (ended 2012)	Wisconsin	Wisconsin Medicaid	Pharmaceutical care service	Wisconsin Medicaid and SeniorCare recipients	$9.66 for 0-5 minutes, $15.01 for 6-15 minutes, $22.66 for 16-30 minutes and $41.02 for ≥31 minutes
PharmAssist Program[35,90]	2004 (ended 2009)	Wyoming	Wyoming Department of Health	Medication consultation	Wyoming resident	Up to $129.82

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
Medicare Part D Medication Therapy Management Program[91-97]	2006	Multiple states	Centers for Medicare & Medicaid Services	Varies between pharmacy and Part D sponsor	Medicare Part D enrollee with multiple chronic diseases (defined by each program), taking multiple Part D–covered drugs and likely to incur annual costs of ≥$3000 for Part D drugs	Varies
Humana Medication Therapy Management Program[98]	2011	Multiple states	Humana	Comprehensive medication review	Humana members	$51.13
				Prescriber consultation		$20.45
				Patient compliance consultation		
				Patient education and monitoring		$10.23
Medi-CareFirst Medication Therapy Management[99]	2008	Multiple states	Medi-CareFirst BlueCross BlueShield	Comprehensive medication review	Medi-CareFirst BlueCross BlueShield members in Delaware, Maryland and Washington, DC	$76.70
				Prescriber consultation (cost efficacy or DTP management)		$20.45
				Patient compliance consultation		
				Patient education and monitoring		$10.34
New Zealand						
New Zealand National Pharmacist Services Framework[100-103]	2007	Nationwide	District Health Boards of New Zealand	Medications use review and adherence support	≥1 of the following: taking ≥3 medicines and/or ≥12 doses/day, multiple prescribers, recent hospitalization, high-risk medication use, presence of a DRP, nonadherence, sensory/language/cognitive deficiencies, on narrow therapeutic index drug or on a drug suspected of being inappropriately used	$86.38 for initial consultation, $21.60 for follow-up
				Medicines therapy assessment (as part of multidisciplinary team)	≥1 chronic diseases, ≥2 comorbidities and ≥4 medicines and/or ≥12 doses/day or at risk of an adverse effect	$103.66 for initial consultation, $51.83 for follow-up
				Comprehensive medicines management (as part of multidisciplinary team, including future pharmacist prescribing)		$138.21 for initial consultation, $69.10 for follow-up

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
United Kingdom						
Starting Fresh and Smoke Free Pharmacy Services[104-108]	2008	Scotland	National Health Service Greater Glasgow & Clyde	Behavioural smoking cessation counseling (may include prescribing of NRT or drug therapy)	NA	$7.81 for baseline visit, $21.86 for weeks 1-4 visits, $15.62 for weeks 5-8, $9.37 for weeks 9-12[b]
Community Pharmacy Heart Failure Service[109]	2005	Scotland	National Health Service Scotland	Heart failure service	NA	$57.53 for initial review, $16.44 for follow-up
Medication Use Reviews[110-112]	2008	Scotland, England, Wales	National Health Service	Medication use review	NA	$42.16
Discharge Medicines Review Service[113]	NA	Wales	National Health Service Wales	Discharge medicines review (includes 2 visits)	Recently discharged plus 1 of the following: medications changed during hospitalization, on ≥4 medicines, requires compliance packaging or pharmacist assessment of patient benefit from service	$57.78 per visit
Minor Ailments Scheme[114-116]	2005	England	National Health Service	Minor ailments consultation (eligible conditions vary)	England resident	Varies by primary care trust, range from $4.68-10.93
	2009	Northern Ireland	Health and Social Care in Northern Ireland	Minor ailments consultation (coughs and colds, hay fever, head lice, athlete's foot, threadworms, vaginal thrush, diarrhea and Dhobie itch)	Patients receiving free prescriptions from the state	$15.68 for the first 500 consultations per pharmacy, $12.55 for next 1000 and $10.21 per consultation thereafter
Appliance Use Review[117,118]	NA	England	National Health Service	Appliance use review	NA	$46.36 if performed in a pharmacy, $89.40 if performed in patient's home. $46.36 for subsequent reviews for same patient within a 24-hour period
New Medicine Service[118-120]	2011	England	National Health Service	New medication service consultation	Newly prescribed drug for asthma, COPD, type II DM, HTN or antiplatelet/anticoagulation therapy	$33.11-$46.36 depending on the total number of patients who receive the service in the month per pharmacy

TABLE 1 (continued)

Program	Year Started	Location	Payer	Service	Eligible Patients	Fee*
Europe						
Inhaler Technique Assessment Service[121]	2005	Denmark	Danish Ministry of Health	Inhaler technique assessment service	Asthma or COPD	$11.87
Polymedications Check[122,123]	2010	Switzerland	Swiss Federal Office of Public Health	Polymedications check	Swiss resident on ≥4 prescribed drugs taken for ≥3 months	$50.00[c]
Australia						
Medication Management Review Program[124-126]	2005	Nationwide	Australia Government—Department of Human Services	Residential medication management review	Resident of government-funded aged care facility, if requested by general practitioner	$99.93
	2012			MedsCheck	Medicare or Department of Veterans Affairs cardholder, living at home, taking ≥5 prescriptions or with recent significant medical event	$60.02
				Diabetes MedsCheck	Diagnosed with type II DM in past 12 months or who are uncontrolled and unable to access an existing diabetes education/health service	$90.03

*To facilitate comparison, all reported remuneration amounts and cost outcomes were converted to Canadian dollars using the Bank of Canada currency conversion rates as of September 16, 2013.

HTN, hypertension; DM, diabetes mellitus; COPD, chronic obstructive pulmonary disease; HF, heart failure; IHD, ischemic heart disease; DRPs, drug-related problems; FOBT, fecal occult blood test; DTP, drug therapy problem; HbA1c, glycosylated hemoglobin; CVD, cardiovascular disease; GERD, gastroesophageal reflux disease; NA, not available; NRT, nicotine replacement therapy.

a. University of Maryland School of Pharmacy, personal communication, May 20, 2013.

b. NHS Greater Glasgow and Clyde, personal communication, June 4, 2013.

c. University of Basel, personal communication, May 22, 2013.

TABLE 2 Remuneration programs with incomplete information available

Program	Year Started	Location	Payer	Service	Eligible Patients
United States					
MaineCare Medication Therapy Management Services[127]	2012	Maine	Maine Department of Health and Human Services	Medication therapy management	MaineCare beneficiary with ≥1 chronic disease, prescribed multiple drugs and designated by their primary care provider as eligible for medication therapy management services
Community Pharmacy Cognitive Care Initiative[128,129]	2011	New Mexico	State of New Mexico	Action plan development	State of New Mexico employees/dependents with adherence issues or therapeutic omissions related to CVD, DM, pulmonary disease, immunology, women's health or neurology
About the Patient Program[130,131]	2008	North Dakota	North Dakota Public Employees Retirement System, North Dakota Workplace Safety & Insurance	Medication therapy management Diabetes management program Pain management program	Plan enrollees with ≥2 chronic conditions, on ≥2 medications and with annual drug costs of ≥$3000 USD
Lucas County Prescription Drug Use Review Program and Diabetes Case Management Program[132-134]	NA	Ohio	Lucas County Employer Group	Drug use review Diabetes case management	Enrollees of the Lucas County employee prescription drug program
Medication therapy management[135]	NA	Wisconsin	Unity Health Insurance, Dean Health Plan and State of Wisconsin Employee Trust Fund	NA	NA
Diabetes Prevention and Control Alliance[136-138]	NA	Multiple states	UnitedHealth Group and Medica	Diabetes control program	UnitedHealth Group members with DM
United Kingdom					
Emergency hormonal contraception program[139,140]	NA	Wales and Scotland	Bridgend Local Health Group	Emergency hormonal contraception counseling	Females age ≥13 years

CVD, cardiovascular disease; DM, diabetes mellitus; NA, not available.

TABLE 3 Eligibility restrictions placed on medication review programs

Criterion	Number of programs
Minimum number of drugs taken (range, 2-11)	13
Multiple chronic conditions	8
Recent discharge from hospital	4
Presence of specific chronic conditions:	5
• Asthma ($n = 4$)	
• Cardiovascular disease (including hypertension, heart failure, ischemic heart disease, dyslipidemia) ($n = 4$)	
• Mental health disorder (including addiction) ($n = 3$)	
• Diabetes ($n = 4$)	
• Chronic obstructive pulmonary disease ($n = 3$)	
• Others: chronic kidney disease, obesity, gastroesophageal reflux disease, sickle cell anemia ($n = 1$ for each)	
Patient age	3
Multiple prescribers	3
Drugs requiring laboratory monitoring	2
Need for compliance packaging	2
Minimum annual drug costs	1

Other common remuneration programs identified were for contacting prescribers about drug therapy problems identified ($n = 13$), smoking cessation counseling ($n = 9$), diabetes management ($n = 5$), emergency hormonal contraception counseling ($n = 2$) and device training for inhaled medications ($n = 2$). Minor ailments programs are operational in Saskatchewan, England and Northern Ireland.[23,114-116] Seven programs paid pharmacists for prescription adaptation services, including therapeutic substitution, dose or dosage form changes, emergency prescribing or extending refills. The fee for prescription adaptation services (currently offered only in North America) averages $15.16 (SD $9.12) per service. When remuneration was provided based on a prespecified time increment, this fee was found to be on average $1.68 (SD $0.75) per minute.

Additional pharmacist training requirements

Fourteen programs (23%) required pharmacists to complete additional training or certification to provide services, including basic training on administration of the program,[22,83-85,99-102] attendance at a workshop or completion of an online module on the disease state involved,[22,23,25,55-58,82,103-108] credentials of a Certified Diabetes Educator or Board Certified Pharmacotherapy Specialist[30-33,42-46] or completion of a residency or certificate program.[30-33,79,80] In Alberta, pharmacists with Additional Prescribing Authorization can claim higher fees for medication reviews and follow-ups than those without this authorization,[10] and in Saskatchewan, pharmacists with PACT (Partnership to Assist with Cessation of Tobacco) training can claim for smoking cessation counseling visits of longer duration than those without PACT training.[23] One program restricted program participation to pharmacists graduating after 1996.[52,53]

Evaluation of outcomes

Patient and/or pharmacist uptake data, clinical or economic outcomes and barriers preventing further expansion or service provision were identified for 16 programs, representing 27% of all programs identified, and are presented in Appendix 2 (available online at cph.sagepub.com/supplemental).

Concerns with low uptake by pharmacists were reported across multiple studies. For example, the Wisconsin Medicaid Pharmaceutical Care Program found that 37% of pharmacies participated in the program for only 1 year.[88] Similarly, in New Zealand, only half of pharmacists accredited to perform medication use reviews were actually performing that service regularly.[103]

Patient uptake of pharmacist clinical care services was also highly variable. At the lower end, only 17% of patients eligible for the Iowa Priority program and with prescription drug claims received a brown bag medication review.[41] Conversely, 12 pharmacists in Texas saw 500 diabetic patients within 6 months,[80] and Scottish pharmacists provided smoking cessation services to 12,000 patients per year.[104,105]

When provided, pharmacist services were effective for smoking cessation,[25,104,105] identifying and resolving drug-related problems,[50,51,66,94,139,141] and improving clinical parameters such as glycosylated hemoglobin (HbA1c), cholesterol and blood pressure.[45,50,51,69,81,95] However, 1 study of Medicare Part D medication therapy management services found mixed clinical outcomes.[142] Pharmacist services were also widely considered to have a net cost benefit,[50,66,70,71,80,81,94,140,142-145] with estimated returns on investment from the payer perspective ranging from $1.29 per dollar spent within the Minnesota Medication Therapy Management Program[50] to $2.50 per dollar spent in a Medicare Part D Medication Therapy Management Program.[144]

Patient satisfaction, when measured, was high,[50,142,146,147] as was job satisfaction among U.K. pharmacists performing Medication Use Reviews.[112] Barriers identified by pharmacists as impeding the uptake and success of remunerated clinical care services include low reimbursement rates, cumbersome billing processes, time constraints, lack of privacy in the pharmacy, insufficient publicity regarding the availability of services and lack of interest among physicians and patients.[42,88,103,112,148] Patients noted lack of privacy to be a barrier to seeking minor ailments advice from pharmacists in England.[148]

Discussion

We identified 118 records describing 60 remunerable pharmacist clinical care services across North America, Europe, Australia and New Zealand. Remunerated services included medication reviews, chronic disease management, prescription adaptations, emergency hormonal contraception counseling, smoking cessation counseling and minor ailment programs. Some regions in the United States also paid pharmacists for contacting prescribers to resolve drug therapy problems or to authorize the substitution of more cost-effective therapies.

In the 5 years since our previous review,[7] the number of remunerated pharmacist clinical care services programs described in the literature has shown expansion, although one cannot rule out that some additional citations may have been identified through our use of an expanded search strategy. Consistent with previous findings, nearly three-quarters of programs are paid for by government payers, with the remainder being supported by private insurance companies. One disturbing finding is that the proportion of programs reporting uptake and outcome data has declined from 50% to 27% in the current review. Although these findings may be limited by the few programs collecting such data internally, to remain sustainable, uptake and outcome data are critical to demonstrate a return on investment in these services from a payer perspective, to encourage expansion of remunerated programs and to demonstrate the impact of pharmacist care on patient care and health system outcomes. Processes to both collect and publish this information should therefore be built into every remuneration program.

Although lack of remuneration is a commonly expressed barrier preventing pharmacists from providing more clinical care services, outcome data presented here suggest that the mere presence of a remuneration scheme is insufficient to ensure uptake in practice. For example, pharmacist participation in the remuneration programs described herein was found to vary considerably, with some programs reporting very low numbers of participating pharmacies[51,149,150] and others reporting a high initial expression of interest but short persistence or very low patient enrollment over time.[25,87-89,103,112]

Payers should consider the commonly reported barriers to uptake, including insufficient remuneration for services offered, cumbersome paperwork and complicated claims submission processes, when designing and evaluating programs. Practicing front-line pharmacists should be invited to these discussions and

processes should be pilot-tested prior to rollout to identify and resolve administrative issues. For other barriers such as insufficient privacy in the pharmacy, time constraints and insufficient public awareness of services, employers and payers should expect that there may be some changes needed to the pharmacy layout, workflow and marketing strategy. However, one cannot rule out that some pharmacists may report the presence of a number of external barriers when motivation and other internal barriers are the primary issue. Pharmacists often lack confidence and are risk averse.[151,152] Social cognitive theories may offer insight into the resistance to change, as they have been shown to reliably explain intention and predict the behaviour of health professionals. For example, Herbert et al.[153] used the theory of planned behavior to predict pharmacist uptake of Medicare medication management services. The theory helped identify that the most significant predictor of uptake was the "subjective norm," or the pharmacist's perception of whether others think the service should be delivered.

Due to the high degree of heterogeneity among programs, this study was limited to the descriptive review of remunerated clinical care programs described in the literature or online. Given that over 70% of the references we identified that describe such programs are online resources and considering the large number of potential government and private insurance payers, it cannot be assured that our review captured all programs in existence worldwide. Publication bias, where programs with neutral or negative outcomes did not seek publication, also cannot be ruled out. The search may also not have identified private plans that reimburse patients' out-of-pocket costs for clinical services by pharmacists through Health Spending Accounts or other flexible accounts. Additionally, heterogeneity among fee schedules, patient eligibility, reporting methodologies and outcomes collected precluded the meta-analysis of outcomes achieved and whether a relationship exists between the payment models and/or remuneration amount and the uptake of programs or outcomes. While the limited outcome data identified suggest that pharmacist-provided clinical care services can improve patient adherence and markers of chronic disease, future research should consider whether improvements in these surrogate outcomes actually translate into improvements in hard outcomes, such as major cardiovascular events, hospitalizations or mortality. The effect of these clinical care services on patient quality of life has also been insufficiently studied to date. To address these knowledge gaps, we recommend that rigorous outcome reviews by a third party be included in programs' implementation plans, using regular cycles of evaluation and revision to improve program effectiveness.

With diminishing revenues from dispensing, remuneration models for clinical care services should also consider pharmacies' changing business models from primarily dispensing-based revenues to a blend of dispensing and patient care reimbursement income. Pharmacist opinion surveys have suggested that pharmacists often consider the fees to be insufficient, considering the time required to provide patient care.[42] Only 3 programs reported the mean time spent by pharmacists providing patient care,[95,103,142] with medication use reviews in New Zealand taking twice as long to perform on average (57 minutes) than expected (30 minutes) according to the payment policy.[103] More research is therefore needed to establish if fees are commensurate with the cost required to provide the service from the pharmacy's perspective or, perhaps, if pharmacists need to provide services in a more time-efficient manner. Opportunities to streamline processes and improve efficiency should also be explored. Reported returns on investment of $1.29 to $2.50 per dollar spent by these programs[50,143] suggest that there may be room to more fairly compensate pharmacists for these services and encourage greater uptake while still remaining cost-effective, although conversely, high fees may be a deterrent for potential payers. Additionally, readers must exercise caution when interpreting ROI data from other countries in the landscape of Canada's universal health care system. As costs and savings may be realized from different perspectives (provincial Ministry of Health vs private insurance), observed outcomes may be due to a shift in costs or savings from one payer to another.

Conclusion

Despite a doubling in the worldwide number of remunerated pharmacy clinical care services described in the literature since 2006, the types of services included and the fees offered continue to vary significantly even within similar geographic

areas, and evaluation data remain sparse, inconsistently collected and reported. Expanding pharmacist scopes of practice worldwide and diminishing revenues from dispensing activities suggest that these programs will take on a larger role in pharmacy business models in the future. In addition to ensuring that payers adequately reimburse pharmacists for the time spent providing this cost-effective care and that patient inclusion criteria are sufficiently broad to ensure access to care, pharmacists must also make both physical and workflow-related changes to their practices to be able to accommodate these increasingly important activities. ■

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