Uptake of the Medication Assessment Program in Saskatchewan: Tracking claims during the first year

*Lynette Kosar, BSP, MSc; Nianping Hu, PhD, MD, MSc; Lisa M. Lix, PhD;
Yvonne Shevchuk, BSP, PharmD; Gary F. Teare, PhD, MSc, DVM;
Anne Champagne, BSP, ACPR; David F. Blackburn, PharmD*

Background

Medication assessments have become a prominent clinical activity in community pharmacies, and most Canadian provinces now provide compensation to varying degrees.¹ Although medication assessment programs have been offered for several years, little is known about population-wide uptake. Historically, implementation of additional pharmacist professional services has been difficult, and barriers to higher participation have been well documented.^{2,3} A 2014 systematic review found only 17% to 45% of eligible patients receive clinical services from community pharmacies following the establishment of remuneration programs.³ “MedsCheck,” a government-sponsored medication assessment program in Ontario, has been performed on approximately 10% of residents taking 3 or more chronic medications over the first 6 years of the program.⁴

Saskatchewan’s provincial drug plan launched a medication assessment program in 2013 (Saskatchewan Medication Assessment Program [SMAP]).^{5,6} Under this program, medication assessments conducted by community pharmacists are remunerated for drug plan beneficiaries who are 65 years of age and older and who satisfy at least 1 of the following criteria relating to medication use: 5 or more chronic medications (including nonprescription products), an anticoagulant covered by the provincial drug plan⁷ or any medication listed in the 2012 edition of the American Geriatrics Society (AGS) Beers Criteria for Potentially Inappropriate Use in Older Adults.⁸ The program allows for a medication

assessment once every 365 days and up to 2 follow-up assessments every 365 days. Patients sign a written consent agreeing to receive the medication assessment service and to share the information gathered with health care providers within their circle of care.

The aims of this study were to 1) describe uptake of the SMAP since its launch on July 8, 2013, and 2) to compare characteristics of individuals receiving, versus not receiving, a medication assessment under the SMAP.

Methods

Data source

This study was conducted using Saskatchewan’s health-administrative databases. The prescription database captures all benefit claims for medications listed in an extensive formulary that are dispensed to beneficiaries, who account for approximately 90% of the provincial population.⁷ Medication assessment claims are also recorded in the prescription database. A SMAP “pseudo” drug identification number has been assigned so these claims are processed and submitted electronically like a prescription dispensing record.^{5,6} Therefore, all successful SMAP claims in Saskatchewan can be tracked using this database. Since any chronic medication counts towards SMAP eligibility (i.e., not just covered medications), the nonadjudicated claims database was also used to capture beneficiaries’ use of medications that are not covered by the provincial plan. Also, as initially only patients living in the community in their own residence were

FIGURE 1 Frequency of annual Saskatchewan Medication Assessment Program (SMAP) claims submitted each quarter between July 8, 2013, and September 30, 2014*

*Stratified by new versus repeat assessments.

eligible for the SMAP, the Special Care Home System (SCHS) database was used to identify those residing in care facilities. The main limitation of the SCHS database is the lack of information on type of facility, that is, long-term care facility (ineligible for SMAP claims) versus special care homes (eligible for SMAP claims as of April 1, 2014).

Procedures

All SMAP claims recorded in the Saskatchewan Drug Plan prescription database were summed and reported quarterly, starting from the program's launch date on July 8, 2013, and extending until September 30, 2014. Claims were stratified into new and repeat annual assessments. In addition, all drug plan beneficiaries were screened for SMAP eligibility on the first day of each quarter (i.e., January 1, April 1, July 1, October 1) during the study period. Patients were deemed eligible for SMAP if they were at least 65 years of age and had received eligible medications in the previous 6 months (i.e., 5 or more chronic medications, an anticoagulant, or a Beers medication). Individuals residing in care homes (i.e., listed in the SCHS database) on the first day of each quarter were excluded from the primary analysis.

Eligible patients were stratified into 2 groups: 1) those who received at least 1 SMAP claim (the "SMAP-claimed cohort") and 2) patients who were deemed eligible for SMAP in at least 1 of the quarterly assessments but did not receive a SMAP claim (the "SMAP-eligible cohort"). For the SMAP-claimed cohort, demographic

information (sex, age and urban/rural residence) was determined on the claim date. For the SMAP-eligible cohort, demographic information was determined on the first day of the quarter in which an individual was eligible. Eligible cohort members were only assessed once on the earliest date of eligibility. Rural was defined as a town with a population of less than 5000. Age, sex, urban/rural residence and type of SMAP medication eligibility criteria were described for each cohort, and the 2 cohorts were compared using *t* tests for continuous variables and χ^2 for dichotomous variables. Study data were analyzed using SAS version 9.3 (SAS Institute, Cary, NC).

Results

Between July 8, 2013, and September 30, 2014, a total of 140,803 Saskatchewan Drug Plan beneficiaries satisfied SMAP criteria at least once. Of these, 10,441 (7.4%) unique patients accounted for 11,472 SMAP claims. On average, 2294 claims were submitted in each quarter of the study period (range, 2037-2584) (Figure 1). All of the repeat claims ($n = 1031$) occurred in the last quarter and accounted for 39.9% of claims at that time.

Of the 10,441 individuals who received at least 1 SMAP claim, eligibility was confirmed using study databases for 99.7% ($n = 10,414$). Of the 0.3% ($n = 27$) of SMAP recipients who did not meet the eligibility criteria, almost all (85%, $n = 23$) were excluded because they were linked to the SHCS database at the time of assessment. The remaining individuals (15%, $n = 4$) did not meet any of the study criteria and presumably

TABLE 1 Patient demographics of those who had a Saskatchewan Medication Assessment Program claim versus those who were eligible but had no claim*

	SMAP annual medication assessment claim (<i>n</i> = 10,441), <i>n</i> (%)	Eligible for SMAP but no claim (<i>n</i> = 130,362),[†] <i>n</i> (%)	<i>p</i>-value
Female	6014 (57.6)	71,543 (54.9)	<0.01
Rural [‡]	380 (3.6)	7649 (5.9)	<0.01
Age in years (mean, SD)	77.4 (7.8)	75.7 (8.0)	<0.01
Age in years (median, IQR)	77 (71-83)	74 (69-81)	<0.01
Age group			
65-70 years	2392 (22.9)	43,504 (33.4)	<0.01
71-75 years	2085 (20)	27,757 (21.3)	
76-80 years	2132 (20.4)	22,561 (17.3)	
81-85 years	2051 (19.6)	18,099 (13.9)	
≥86 years	1781 (17.1)	18,441 (14.1)	
≥5 Chronic medications	10,307 (98.7)	123,787 (95.0)	<0.01
Beers medication(s)	6965 (66.7)	85,255 (65.4)	<0.01
Anticoagulant	1984 (19.0)	13,222 (10.1)	<0.01
Met 2 of the 3 medication criteria	7467 (71.5)	89,216 (63.4)	<0.01
Met all 3 of the medication criteria	1441 (13.8)	11,528 (8.2)	<0.01

IQR, interquartile range; SD, standard deviation; SMAP, Saskatchewan Medication Assessment Program.

*A total of 140,803 beneficiaries were eligible for SMAP, of whom 10,441 received a SMAP claim; 130,362 were eligible but did not have a SMAP claim.

[†]Data on rural/urban residence was missing for 4 individuals.

[‡]Rural refers to Saskatchewan towns with a population of less than 5000.

were receiving therapies not captured in the Saskatchewan Drug Plan database.

On average, SMAP recipients were 77.4 years of age (SD = 7.8 years), 57.6% were female and 3.6% resided in rural settings (Table 1). In the prior 6 months, almost all SMAP recipients (98.7%) had received at least 5 chronic medications, 66.7% had received at least 1 medication on the Beers list and 19% had received an anticoagulant. A high percentage of SMAP recipients satisfied at least 2 eligibility criteria (71.5%), and 13.8% met all 3. Few notable differences were observed between SMAP recipients and the eligible cohort, except 5.9% of the SMAP-eligible cohort resided in rural areas compared to 3.6% of the SMAP-claimed ($p < 0.01$) cohort (Table 1). In addition, the SMAP-claimed cohort appeared to be slightly older (median age 77 vs 74; $p <$

0.01) and were more likely to exhibit more than 1 SMAP criteria (71.5% vs 63.4%; $p < 0.01$).

Discussion

Between July 8, 2013, and September 30, 2014, community pharmacies in Saskatchewan claimed medication assessments for 10,441 patients. These patients represented approximately 7.4% of the total number of patients eligible for the program. The total number of SMAP claims submitted in each quarter remained relatively stable during the first year, ranging from 2037 to 2584. Repeat claims were only observed during the last quarter of the study period when 1 year had lapsed for individuals who received a SMAP in the first quarter of observation. These repeat annual assessments accounted for 40% of all SMAP claims during the final quarter of

the study period. Virtually all SMAP-eligible patients were receiving 5 or more chronic medications. Other eligibility criteria resulted in very few additional patients being identified.

Uptake of the SMAP program in Saskatchewan (7.4%) appeared similar to the 11% (i.e., 1 in 9 patients) uptake of the MedsCheck program in Ontario.⁴ Of note, Ontario pharmacies were paid \$950 upon submission of their first claim to offset the start-up costs associated with the program.⁴ Subsequent claim reimbursements were \$50/claim, which was increased to \$60/claim in June 2010.⁴ In Saskatchewan, a start-up fee is not provided and pharmacies are reimbursed \$60 for each annual SMAP claim.^{5,6} It is important to acknowledge that enrollment in medication assessment programs is voluntary, so some patients may refuse the service. The extent to which patient refusal contributed to the overall uptake of the SMAP could not be determined using the available data sources.

Eventually, these programs will need to be rigorously evaluated from a cost-benefit perspective. However, as of 2014, only a small percentage of eligible residents had received a medication assessment (7%), and thus province-wide health improvements would be unlikely at this early stage. Full implementation, where all eligible patients receive medication assessments, is likely not possible without a major system overhaul. Furthermore, the use of quotas by employers has been perceived as an attack on professional autonomy.⁹ If full implementation cannot be achieved, the fraction of eligible patients receiving medication assessments should ideally represent those at the highest risk for drug- or disease-related events. In our study, eligible patients receiving medication assessments were slightly older, but an accurate comparison of clinical status could not be conducted with data available to the researchers.

Detection of benefits is further complicated by the scope of the activity itself. These programs are directed towards a relatively heterogeneous group of patients, and interventions are determined at the individual level. Thus, identification of a single outcome representing success (i.e., humanistic, health care utilization, medication utilization, morbidity/mortality) will be a challenge. As more research findings emerge, stakeholders must continuously reevaluate the impacts and costs to ensure these programs

evolve to maximize their contribution to the health care system and patient outcomes.

Several limitations of this research should be noted. First, due to limitations of the data source, it was impossible to identify all individuals meeting eligibility criteria for SMAP. Specifically, claims for most over-the-counter products and some prescription medications taken chronically will not be captured in the data. Also, there will be a certain percentage of eligible individuals in the province who did not receive chronic medications as prescribed due to nonadherence. As a result, the number of individuals eligible for SMAP assessments is likely to be underestimated.

Second, on April 1, 2014, SMAP eligibility was expanded to include individuals residing in special care homes but not long-term care homes. Because the type of care home could not be identified in the SCHS database, we excluded all patients registered in the SCHS database. However, this approach only resulted in the exclusion of less than 0.5% of individuals with SMAP claims. Of these excluded individuals, only 4 beneficiaries were not linked to the SCHS database. It is presumed that they did not meet any of the study criteria as they may have received therapies not captured in the Saskatchewan Drug Plan, there may have been a pharmacy error in submitting the claim on the wrong senior or the pharmacist may have misinterpreted the criteria and billed for an ineligible patient. Third, the research only tracked SMAP claims submitted to the Saskatchewan Drug Plan and Extended Benefits Branch. It is possible that community pharmacists conducted medication assessments without submitting a claim for the service. Also, SMAP quality (including patient outcomes) or the appropriateness of selected patients could not be determined.

Conclusion

Fewer than 1 in 10 eligible patients received a medication assessment in the first year of the SMAP program in Saskatchewan, and the identification of new patients seems to have slowed with the opportunity to claim repeat annual assessments. These descriptive data should serve as a baseline for future studies on the growth of the program, appropriateness of participating patients and the impact on patient outcomes. Current levels of implementation are likely too low to affect population-level health outcomes. ■

From the College of Pharmacy and Nutrition (Kosar, Shevchuk, Blackburn), University of Saskatchewan; RxFiles Academic Detailing Program (Kosar), Saskatoon Health Region; the Health Quality Council (Hu, Teare), Saskatoon, Saskatchewan; the Department of Community Health Sciences (Lix), University of Manitoba, Winnipeg, Manitoba; and the Saskatchewan Ministry of Health, Regina, Saskatchewan. Contact d.blackburn@usask.ca.

Author Contributions: A. Champagne and colleagues at the Saskatchewan Drug Plan and Extended Benefits Branch conceptualized the idea. All authors participated in development of the methods identifying endpoints. N. Hu extracted all data and conducted all analyses. L. Kosar wrote the initial draft of the report and all authors participated in revisions and editing.

Disclosure: David Blackburn is the Chair in Patient Adherence to Drug Therapy within the College of Pharmacy and Nutrition, University of Saskatchewan. This position was created through unrestricted financial support from AstraZeneca Canada, Merck Canada, Pfizer Canada and the Province of Saskatchewan's Ministry of Health.

Declaration of Conflicting Interests: The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Disclaimer: This study is based in part on de-identified data provided by the Saskatchewan Ministry of Health. The interpretation and conclusions contained herein do not necessarily represent those of the government of Saskatchewan or the Saskatchewan Ministry of Health.

References

1. Pammatt R, Jorgenson D. Eligibility requirements for community pharmacy medication review services in Canada. *Can Pharm J (Ott)* 2014;147(1):20-4.
2. Armour C, Brilliant M, Krass I. Pharmacists views on involvement in pharmacy practice research: strategies for facilitating participation. *Pharm Pract* 2007;5:59-66.
3. Houle SK, Grindrod KA, Chatterley T, Tsuyuki RT. Paying pharmacists for patient care: a systematic review of remunerated pharmacy clinical care services. *Can Pharm J (Ott)* 2014;147(4):209-32.
4. Dolovich L, Consiglio G, MacKeigan L, et al. Uptake of the MedsCheck annual medication review service in Ontario community pharmacies between 2007 and 2013. *Can Pharm J (Ott)* 2016;149(5):293-302.
5. Saskatchewan Drug Plan and Extended Benefits Branch, Ministry of Health. Saskatchewan Medication Assessment Program (SMAP): Procedures & Guidelines for Saskatchewan Pharmacists. July 8, 2013. Regina, Saskatchewan, Canada: Saskatchewan Drug Plan and Extended Benefits Branch.
6. Saskatchewan Health Drug Plan Policy. Section: Pharmacy Professional Services. Saskatchewan Medication Assessment Program (SMAP): Policy and Procedures. April 1, 2014. Regina, Saskatchewan, Canada: Saskatchewan Drug Plan and Extended Benefits Branch.
7. Government of Saskatchewan. Drug Plan and Extended Benefits Branch: online formulary. Available: <http://formulary.drugplan.health.gov.sk.ca> (accessed Oct. 30, 2017).
8. American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2012;60(4):616-31.
9. Griffith-Greene M. Are pharmacists turning into salespeople? Available: www.cbc.ca/news/health/are-pharmacists-turning-into-salespeople-1.3007463 (accessed Oct. 30, 2017).