

PHARMACY PRACTICE

Provision of Pharmacy Services at an Influenza Assessment Centre

Adriana Chubaty, Kristen Rowntree, and Alice Chan

INTRODUCTION

On October 30, 2009, during the H1N1 pandemic, Alberta Health Services opened the Duggan Influenza Assessment Clinic in Edmonton, Alberta. The clinic had several purposes: to expedite triage of patients with influenza to the most appropriate care venue; to provide timely, accessible clinical assessment services for patients with mild to moderate influenza-like illness; to divert these patients from emergency departments and thus to reserve emergency departments for critically ill or injured patients; and to decrease transmission of disease to vulnerable populations. A multidisciplinary team of health care professionals staffed the clinic.

Initial planning for pharmacy services at the Influenza Assessment Clinic involved the Alberta Health Services Edmonton area pharmacy and was based on a need for dispensary and counselling activities related to antiviral and inhalation medications and maintenance of clinic wardstock. As the processes for patient triage and assessment evolved, additional opportunities were identified for greater pharmacy involvement. On November 23, 2009, the Influenza Assessment Clinic in Edmonton closed because of decreased demand for this service.

This article describes the unique pharmacy practice at the Duggan Influenza Assessment Clinic, explores the challenges encountered and lessons learned through the provision of pharmacy services to the clinic, and recognizes the benefits that arose from this experience.

DESCRIPTION OF THE CLINIC

The Duggan Influenza Assessment Clinic was located in the Edmonton area of Alberta Health Services, which serves more than 1 million people. The clinic was set up in response to an increase in hospital admissions for treatment of influenza-like illness, an increase in visits to emergency departments and urgent care clinics, and decreased availability of staff, because of

illness, as well as data from laboratory surveillance indicating that more cases could be expected. Patients were screened before entry to ensure they met approved clinic criteria. A nurse then performed a primary assessment, which was followed by a secondary assessment by a physician or nurse practitioner if required. Before leaving the clinic, patients presented to a pharmacist, who answered patients' questions about general influenza care and provided antiviral and inhaler medications and counselling if required. If necessary, patients could also be given a few doses of certain limited non-antiviral medications that were stocked at the clinic (e.g., analgesics, antiemetics, antibiotics). The pharmacist also reviewed all new clinic prescriptions for appropriateness, including those that were to be dispensed in the community.

Numeric Data

From October 30 to November 23, 2009, about 4200 patients of all age groups visited the Duggan clinic. The goal for each patient's length of stay in the clinic was less than 2 h.

Over the period of clinic operation, 1676 full courses of antivirals (specifically oseltamivir and zanamivir) were released to adult and pediatric patients. Of these, 51 prescriptions for oseltamivir 75-mg capsules were dispensed to health care workers from various sites in the Edmonton area. Of the remaining 1625 prescriptions, 1615 were for oseltamivir and 10 for zanamivir. Of the oseltamivir prescriptions, 327 were for the suspension, 37 for 30-mg capsules, 58 for 45-mg capsules, 64 for 60-mg capsules (which were mainly dispensed to pediatric patients), and 1129 for 75-mg capsules (dispensed to adults and children > 12 years old).

Resources

Pharmacy staff were recruited from 2 large hospitals in Edmonton, the University of Alberta Hospital and the Royal Alexandra Hospital. Overall, 2.8 full-time equivalents (FTEs)

for both pharmacists and pharmacy technicians (2 pharmacist FTEs and 0.8 technician FTEs) were required daily for 7 days per week to cover the clinic hours of 0745 to 0015 (divided into 2 shifts: 0700–1630 and 1445–0015). Staff working overtime hours were paid accordingly.

A total of 20 pharmacists worked at the clinic. Each pharmacist was given the clinic orientation manual and received on-the-job training. A site manager (registered nurse) was available for site orientation and to answer administrative questions.

Antiviral medications were provided from the national stockpile, and their distribution was coordinated by the Alberta Health Services Pandemic Steering Committee. Other wardstock medications (e.g., analgesics, antibiotics, inhalation therapy) were supplied by the Royal Alexandra Hospital pharmacy, with funding from Alberta Health Services. In selecting medications to be included in wardstock, consideration was given to treatment of other causes of flu-like symptoms, current treatment recommendations and guidelines, treatment of other influenza symptoms, treatment of possible adverse reactions to medications, and treatment of severely ill patients requiring transport to the hospital. These wardstock medications were updated continually as feedback and data on usage were received.

Written information for patients was developed by Alberta Health Services before the clinic opened. Forms for patient records, influenza screening and assessment, and prescriptions were preprinted.

Activities of Pharmacists and Technicians

It was initially planned that the pharmacists' responsibilities would be limited to the following: assessing all antiviral and other prescriptions written in the clinic for accuracy and appropriateness, dispensing antivirals, providing drug and influenza-prevention counselling, teaching inhaler technique, and managing inventory. Over time, and as clinic processes improved, the role of the pharmacist evolved to include acting as a drug information source for physicians, nursing staff, and patients; dosing and administering wardstock medications; recommending drug therapy or dosing for secondary infections and complications of influenza; and identifying and resolving drug-related problems. The literature has shown that physicians' prescribing practices are influenced by the storage location of medications,¹ and pharmacists in the Influenza Assessment Clinic were able to optimize prescribing practices by streamlining wardstock to include only those medications and doses recommended in the most current guidelines and practices.

The duties of the pharmacy technicians included filling prescriptions for antivirals and other medications and maintaining the clinic's medication stocks and dispensing records.

Satisfaction Survey

A short satisfaction survey was conducted in July 2010 with a small number of pharmacists and other health care professionals who had worked at the clinic (Tables 1 and 2). Each of the 8 pharmacists surveyed had worked between 1 and 6 shifts while the Influenza Assessment Clinic was open.

DISCUSSION

Pharmacists and other staff faced several challenges during the implementation and operation of the Influenza Assessment Clinic. They also took note of several lessons learned that could be of benefit for future clinics of this type.

Training and Orientation

The announcement of the clinic occurred about 2 weeks before the clinic was to open, and the urgent need for pharmacy services at the clinic placed staff in an unprecedented environment that afforded little time for training and orientation. The pharmacist's role within the clinic was developed on the basis of the assumed needs of the patients who would be presenting to the clinic. There had been no previous clinics of this nature at this location, nor were there any descriptions in the literature to aid in estimating pharmacy workload, resource requirements, or ultimate roles and responsibilities. Pharmacy staff agreed to work at the clinic with limited knowledge of their role and the work environment. This uncertainty was a source of stress, as noted by the pharmacists who responded to the survey.

It was hoped that the challenge caused by uncertainties about roles and responsibilities would be addressed by assigning a dedicated pharmacist (A.C.) to work at the Influenza Assessment Clinic during the first 5 days of the clinic's operations. This pharmacist developed an information package for pharmacy staff who would be working at the clinic and provided basic orientation and training to pharmacists working the evening shifts for those initial 5 days. Scheduling allowed for an overlap in the 2 daily shifts, which in turn allowed time for training and orientation. However, because of the busy nature of the clinic, training time was still limited. The addition of a technician to the clinic also helped to address this challenge, as this measure increased the number of experienced pharmacy staff working in the clinic.

Other potential interventions to improve training and orientation were identified in the survey responses. Additional suggestions were to ensure that the morning shift was always staffed by someone with previous experience at the clinic, to pair any new pharmacy staff member with an experienced staff member, to develop a checklist for training to be completed by new staff, and to create a "mock" clinic pharmacy to help identify potential problems.²

Table 1. Results of Satisfaction Survey for Pharmacists (n = 8)

Questions and Responses	No. of Responses	Questions and Responses	No. of Responses
What types of DRPs or examples of DRPs do you recall identifying and/or resolving?		What changes would you make to future influenza assessment clinics if a pandemic were to happen again?	
Inappropriate dosing	7	Streamline workflow	2
Drug interactions	2	Increase staffing	2
Initiation of therapy required	2	Increased education of role of pharmacist to other health care professionals	2
Drug allergy	1	Technician on all shifts	1
Inappropriate therapy	1	Shortened hours	1
Can you describe some interactions you had with other health care professionals?		Use video of antiviral counselling	1
Dosing recommendation	6	Implement more quickly	1
Drug information question	3	Discontinue sooner when workload slowed	1
Recommending drug therapy	3	Core group of staff to decrease orientation	1
Medication administration	2	Better coordination of and shift communication to staff	1
Medication preparation	2	Decrease dispensing role of pharmacist	1
Request for additional counselling	1	Use community pharmacists to staff clinic	1
Medication order clarification	1		
How would you characterize your experience(s) with other health care professionals?		If the Influenza Assessment Clinic were to open again, would you volunteer again?	
Positive / good, wonderful	3	Yes	7
Collaborative / courteous	3	No	0
Accepting of and reliant on pharmacist involvement / happy to have pharmacist help	2	Maybe	1
Not much interaction with physicians / physician did not want to utilize pharmacist	2		
Improved with previous interactions	1	If the Influenza Assessment Clinic were to have remained open for longer, would you have continued to volunteer to work there?	
		Yes	7
		No	0
		Maybe	1
What did you like about working in the Influenza Assessment Clinic?		How stressful did you find working at the Influenza Assessment Clinic?	
Overtime wage	5	Very	0
Patient appreciation / community help	5	Somewhat	1
Cooperation / team effort / interdisciplinary environment	5	Fairly	1
Organized	2	Rarely	6
Job satisfaction	1	Not stressful at all	0
New environment outside the hospital	1		
What did you not like about working in the Influenza Assessment Clinic?		What were some contributors to the stress?	
Long hours open and having to work next day / lack of a break	5	Multiple patients at once; large patient volume	4
Decreased work when less patients	3	Unfamiliar with processes and procedures; learning on the job	4
No technician help during first 2 h of shift when clinic was busy	2	Technical duties	2
Repetitive oseltamivir counselling	1	Increased workload when first opened	2
Poor patient flow	1	Patient angry with long wait	1
Uncomfortable PPE	1	Rapid patient turnaround	1
Not utilized enough	1	Limited space	1
No food or drink allowed	1	Limited parking	1
		Not enough work when slow	1
		Unfamiliarity with pediatric population	1

DRP = drug-related problem, PPE = personal protective equipment.

Staffing and Workload

Pharmacy staffing for the Influenza Assessment Clinic relied heavily upon personnel who were willing to sign up for clinic shifts in addition to their regular working hours. Initially, large numbers of patients were seen at the clinic, and staff would arrive to find long lineups of patients waiting. Initially, only one pharmacist was scheduled per shift, which meant that the pharmacist on duty had an extremely busy shift and it was difficult to take breaks. The addition of a technician

shift allowed pharmacists to perform more clinical functions and improved workflow.

Lack of breaks was identified as a potential risk to staff and patient safety.^{3,4} Therefore, after the first day, it was decided that pharmacy staff, like other staff in the clinic, would take mandatory breaks during their shifts. No food or drink was allowed in the clinic, and staff wore scrubs, gloves, masks, and face shields while working. These requirements further supported the need for planned, mandatory breaks. When pharmacy staff were on

Table 2. Results of Satisfaction Survey for Other Health Care Professionals (n = 7)

Questions and Responses	No. of Responses	Questions and Responses	No. of Responses
Were you aware that there was a clinical pharmacist at the Influenza Assessment Clinic?		How often did you use or consult the Influenza Assessment Clinic pharmacist?	
Yes	7	All of the time	2
No	0	Most of the time	3
		Some of the time	2
Can you describe an interaction you had with the clinical pharmacist?		Is there anything that could have been done to further maximize pharmacist involvement at the Influenza Assessment Clinic?	
Drug information request	2	Technician at beginning / adequate staffing at peak times	4
Assisting pharmacist with technical duties to allow pharmacist to do clinical activities	1	Better working space to decrease lineups	1
Liaise with needs requested for staffing and resources	1	Increase advocacy of including pharmacy in team and incorporation at provincial/ executive level of planning	1
Resource during nursing assessment	1	Dedicated staff to avoid double shifts and retraining / less staff turnover	3
Collaboration on information management	1	Using pharmacist with additional prescribing authority with prescribing protocol	1
Process for procuring antivirals and development of orientation binder	1		
Daily antiviral usage report	1	Would you support having a clinical pharmacist in a future Influenza Assessment Clinic if such a clinic needed to be reopened?	
Orientation of other pharmacist staff so manager did not need to do this task	1	Yes	7
Referral of complex patient for medication management	1	No	0
Overall, how would you characterize your experience(s) with the clinical pharmacist(s)?			
Awesome, really good / positive / good / very good / great, very pleasant	6		
Able to think on feet, anticipate issues, trouble-shoot	1		
Excellent, integral part of the team, adapted well to change, outstanding professionalism and communication	1		
How do you feel that pharmacist involvement affected patient care at the Influenza Assessment Clinic?			
Ensured drug supply continuity	1		
Increased patient teaching and referral to other appropriate health care professional / patients well counselled	2		
Provided patient closure to experience	1		
Provided a good idea of patient volume and how clinical pharmacist could help	1		
Huge role as education, drug information resource, clarification of prescriptions especially in pediatrics	1		
Added to comprehensive care, increased value of care as resource and to provide recommendations to nurses and physicians	1		
Very valuable, filled role of dispensing and education of antivirals and resource for other health care professionals	1		
Critical, positive, valuable, increased accessibility / positively	3		

break, patients were told that they could wait for the pharmacy staff to return or they could have their prescriptions filled by a community pharmacist.

We believe that if the clinic had remained open for much longer, staff burnout and a decrease in sign-up rates would have become apparent, despite indications to the contrary reported in the survey of pharmacists. Nonetheless, other options for staffing an influenza assessment clinic during a pandemic

should be taken into consideration for the future. Temporarily suspending provision of certain noncritical clinical pharmacy services and redeploying those pharmacists to the Influenza Assessment Clinic was part of the regional pandemic plan. However, this measure was not necessary during fall 2009, as staffing levels did not drop to the point at which this process would be activated. Other alternatives might include using community pharmacists to staff the clinic, creating a video of antiviral and influenza counselling to be played continuously in the clinic, using pharmacists with additional prescribing authority, and having a technician for all shifts.

Communication and Collaboration

Once the clinic was opened, there were constant changes and updates to procedures. However, because the clinic was not staffed 24 h/day, direct communication could not occur at every shift change. Direct communication was also hindered by having clinic pharmacy staff from a number of different hospital sites. To aid with these communication challenges, frequent email updates were sent to clinic workers, updated information was printed and stored in the pharmacy area, shift overlap for communication handover was scheduled between the morning and afternoon shifts, and a communication log was implemented to relay information to future shifts and to provide examples of types of and solutions to problems that occurred. Other possible improvements would be to recruit all clinic workers from 1 or 2 sites or to use a core group of dedicated clinic staff.

Some of the health care workers at the clinic had no prior experience working with pharmacists. However, all of the other health care professionals surveyed were aware that a clinical pharmacist was working at the clinic, and most used or consulted the pharmacy services either all or most of the time (Table 2). One of the pharmacists who responded to the survey reported that one of the physicians had not wanted to use the services of the clinical pharmacist. Most other comments in the surveys characterized the collaborative experiences as positive. Collaboration with other health care providers might have been enhanced if the pharmacists' role and practice scope had been outlined before the clinic was opened. This information could have been included in the general information package that was distributed before clinic opening. Collaboration might also have been enhanced by having a core group of pharmacy staff to provide consistent care and to enhance the building of rapport. Some examples of collaboration that led to enhancement of patient care included nurses seeking pharmacists for administration of and education about pediatric inhalers and nurses and physicians seeking pharmacists' opinions about giving additional doses of medications to patients who were vomiting. These collaborative interventions helped to improve the timeliness and efficacy of treatment, as well as helping to prevent toxic effects of medications.

Limited Resources and Organization

The pharmacy area of the Duggan Influenza Assessment Clinic was an open corner next to the exit. Because the clinic was located in a health centre that did not usually have a pharmacy area, the pharmacy department had to bring in additional resources necessary for operation. The treatment area had only 2 telephones and a single computer with Internet access, and neither of these devices was located in the pharmacy area. After the first few shifts, it was apparent that the availability of resources had to be improved. Staff undertook to improve the organization of the work area and relocated medication stocks to more accessible locations. Print copies of a few key tertiary drug references were brought to the clinic, and pharmacists were encouraged to bring mobile electronic devices loaded with drug information software. A cell phone was dedicated to the area.

If the Influenza Assessment Clinic were to reopen in the future, these resources should be considered mandatory for the pharmacy area. As well, a dry run to observe the logistics and traffic flow of the clinic would help in anticipating problems. In addition, improved layout of the work space and a designated private area were identified as beneficial for future clinics.

Positive Impacts

Despite the many challenges encountered at the Duggan Influenza Assessment Clinic, many additional benefits were

derived, along with dispensing of medications, counselling of patients, and management of inventory. Anecdotally, many of the pharmacists recalled averting medication errors by double-checking prescriptions. In addition, pharmacists identified and resolved a number of drug-related problems. They also played a role in enhancing responsible prescribing through provision of oseltamivir guidelines to the physician group and provision of recommendations on appropriate use of antibiotics. Pharmacy input also ensured that the most appropriate medications and doses were stocked, to help enforce current guideline-based recommendations. For example, levofloxacin 500-mg doses were replaced with 750-mg doses in accordance with the most recently published guidelines from the Infectious Diseases Society of America for treating community-acquired pneumonia.⁵

The dedication and usefulness of pharmacy staff and services were recognized by other health care providers. All of the other health care professionals surveyed characterized their experiences with the clinical pharmacist in complimentary terms, and most felt that the pharmacist had a positive impact on patient care and provided a valuable service. The survey respondents were also able to identify examples of pharmacists' involvement in care. As a result of these positive interactions, other health care professionals and decision-makers expressed interest in pharmacy involvement in future projects. Many patients also expressed their gratitude to the pharmacy staff before leaving the clinic.

CONCLUSIONS

The provision of pharmacy services at the multidisciplinary Duggan Influenza Assessment Clinic during the second wave of the 2009 pandemic H1N1 virus in Edmonton presented operational and clinical challenges for the Alberta Health Services regional pharmacy department. However, the department learned from the experience and was able to have a positive impact on patient care while promoting the profession of pharmacy. This paper has described a novel practice and the provision of enhanced patient care and safety by hospital pharmacists in an urgent, crisis situation.

References

1. Connors GP, Hays DP. Emergency department drug orders: does drug storage location make a difference? *Ann Emerg Med* 2007;50:414-418.
2. Cinti SK, Wilkerson W, Holmes JG, Shalfer J, Kim C, Collins CD, et al. Pandemic influenza and acute care centres: taking care of sick patients in a nonhospital setting. *Biosecur Bioterror* 2008;6(4):335-348.
3. Peterson GM, Wu MSH, Bergin JK. Pharmacists' attitudes towards dispensing errors: their causes and prevention. *J Clin Pharm Ther* 1999;24(1):57-71.
4. Tully MP, Ashcroft DM, Dornan T, Lewis PJ, Taylor D, Wass V. The causes of and factors associated with prescribing errors in hospital inpatients. A systematic review. *Drug Saf* 2009;32(10):819-836.
5. Mandell LA, Wunderink RG, Anzueto A, Bartlett JG, Campbell GD, Dean NC, et al. Infectious Diseases Society of America/American Thoracic

Society consensus guidelines on the management of community-acquired pneumonia in adults. *Clin Infect Dis* 2007;44 Suppl 2:S27-S72.

Adriana Chubaty, BScPharm, ACPR, is a Clinical Pharmacist with the Prince of Wales Hospital, Randwick, New South Wales, Australia.

Kristen Rowntree, BScPharm, ACPR, is a Clinical Pharmacist in the Emergency Department, University of Alberta Hospital/Stollery Children's Hospital, Edmonton, Alberta.

Alice Chan, BSc(Pharm), ACPR, PharmD, is Clinical Practice Leader, North, Alberta Health Services, University of Alberta Hospital/Stollery Children's Hospital, Edmonton, Alberta.

Address correspondence to:

Dr Alice Chan
Pharmacy Department
University of Alberta Hospital/Stollery Children's Hospital
0G1.01 WMC, 8440-112 Street
Edmonton AB T6G 2B7

e-mail: Alice.W.Chan@albertahealthservices.ca

Acknowledgements

We would like to thank the following for their hard work, dedication, and guidance in preparing this paper for publication: Deb van Haaften, BScPharm, Executive Director, Pharmacy, Edmonton & Area, Alberta Health Services; and Theresa O'Donnell, Unit Manager/ Emergency, Alberta Health Services. We also thank Carla Policicchio, Site Director, NECHC/HFS, for proofing the manuscript and for assistance with the satisfaction survey.

CJHP Subscriptions 2011 / Abonnements au JCPH 2011

CSHP has introduced both Print and Print + Online pricing models for CJHP subscriptions. Print + Online CJHP is included as a benefit of CSHP membership. All prices are in Canadian funds.

La SCPH a établi une grille tarifaire pour l'abonnement à la copie imprimée du JCPH seulement et pour l'abonnement à la fois aux copies imprimée et électronique du journal. L'abonnement combiné est inclus dans les droits d'adhésion à la SCPH. Tous les prix sont en dollars canadiens.

Subscriber group / Groupe d'abonnés	Print only / Texte imprimé seulement	New! Print + Online copy Nouveau! Texte imprimé et exemplaire électronique
Nonmembers within Canada / Non-membres au Canada	\$110.00 per year, plus GST or HST 110,00 \$ par an, plus TPS ou TVH	\$150.00 per year, plus GST or HST 150,00 \$ par an, plus TPS ou TVH
USA / É.-U.	\$140.00 per year 140,00 \$ par an	\$180.00 per year 180,00 \$ par an
Foreign / Étranger	\$180.00 per year 180,00 \$ par an	\$220.00 per year 220,00 \$ par an

More details can be found at www.cjhp-online.ca. If you would like to purchase a subscription, please fill out our CJHP 2011 Subscription Application Form, which can be found on the CJHP website.

Please direct any comments or questions to Colleen Drake, Publications Administrator, at cdrake@cshp.ca.

Des détails supplémentaires sont fournis à www.cjhp-online.ca. Si vous désirez vous abonner, veuillez remplir le formulaire d'abonnement au JCPH 2011. Vous pouvez l'obtenir en visitant le site Web du JCPH. Pour tout commentaire ou toute question, veuillez vous adresser à Colleen Drake, agente des publications, en écrivant à cdrake@cshp.ca.