Use of the 2008 Basel Consensus Statements to Assess, Realign, and Monitor Pharmacy Practice at a Tertiary Care Hospital in Northern Uganda: Illustrative Case Study

Jennifer Poh, Régis Vaillancourt, Diane Lamarre, and Josephine Oyella

INTRODUCTION

Pharmaciens sans frontières (also known as Pharmacists Without Borders—Canada or PSF-Canada) has an ongoing collaboration with St Mary's Lacor Hospital (Lacor Hospital) in the Gulu district of northern Uganda. Founded by a group of Comboni missionaries in 1959 and developed by 2 physicians, Dr Lucille Teasdale and Dr Piero Corti, Lacor Hospital has grown from a small 30-bed institution to its current capacity of 483 beds and hosts an average of 600 inpatients and 500 outpatient visits each day. In addition to the main hospital compound, Lacor Hospital owns and operates 3 peripheral health centres, each with a 24-bed capacity. Because of its size and reputation as the best tertiary care hospital in Uganda, Lacor Hospital serves as a training ground for various health care professionals: it is a teaching site for the Gulu University Faculty of Medicine, as well as for the Lacor School of Nursing and the Lacor School of Laboratory Technology.

One of the challenges identified by the executive team at Lacor Hospital has been the need for the hospital's Department of Pharmacy to establish optimal strategies for logistic support and technical assistance with regard to medication management. This objective aligns with the call for optimizing patient safety through the judicious, safe, efficacious, appropriate, and cost-effective use of medications, while making responsible use of limited health care resources and assuring the integrity of the medicine supply chain, as defined by the joint World Health Organization and International Pharmaceutical Federation (FIP) statement on good pharmacy practice.[1]

As a result, PSF-Canada was contracted by the hospital's executive team to provide pharmacy support, knowledge exchange, and knowledge translation at the Lacor Hospital Department of Pharmacy. This collaboration has been in place since May 2009, and, with the help of the hospital's pharmacists and other employees, PSF-Canada has been able to streamline day-to-day pharmacy operations, as well as the organization and inventory control of medications at Lacor Hospital.

A major influence on the actions and recommendations of PSF-Canada to optimize pharmacy practice at Lacor Hospital has been the 2008 Basel consensus statements on the future of hospital pharmacy.[2] These consensus statements were developed by an international consortium of pharmacists to reflect the pharmacy profession's shared vision of hospital pharmacy practice. Their development was prompted by the varied roles that pharmacists play in different countries; for example, hospital pharmacists in some countries practise patient-oriented pharmaceutical care, whereas those in other countries focus on maintenance of the medication supply chain. Results presented in the *2006 FIP Global Pharmacy Workforce and Migration Report*[3] on the diversity of pharmacist roles, along with discussions with hospital pharmacy leaders, led to the distillation of essential characteristics desired in hospital pharmacy practice. In this age of increasing medical complexity, increasing risk, and increasing cost of medications, the 2008 Basel consensus statements strive for a measure of agreement, across borders and across cultures, about the vision of hospital pharmacy practice. They cover all areas of medication management in the hospital setting, including procurement, preparation and delivery, prescribing, and administration, as well as monitoring of patient outcomes and human resources.

Since publication of the Basel consensus statements, there has been no description in the literature evaluating their validity in guiding the development of pharmacy services in a tertiary care hospital. The aim of this article is to illustrate the use of these consensus statements in assessing, realigning, and monitoring pharmacy practice at the Lacor Hospital in Uganda. The actions taken to meet the 2008 Basel consensus statements will also be described.

METHODS

A baseline evaluation was conducted in May 2009, when 2 PSF-Canada pharmacist advisors (R.V. and D.L) were on site at Lacor Hospital to conduct a needs-based assessment. In 2010, a PSF-Canada pharmacist began working on site at Lacor Hospital, and follow-up assessments were done 1 and 2 years later (in 2011 and 2012). During these assessments, all aspects of pharmacy practice at the hospital were ranked in relation to the 2008 Basel consensus statements (met, partially met, not met, not applicable).

RESULTS

Achievement of the 2008 Basel consensus statements increased steadily from the baseline evaluation in 2009 to the second follow-up in 2012. The number of statements that were fully achieved (status of "met") increased from 18 to 35, whereas the number of statements that were not assessed or not applicable declined from 18 to 14 (Table 1). The status of each recommendation at each assessment is detailed in Table 2.

In conjunction with the executive team at St Mary's Hospital, 24 PSF-Canada recommendations specific to the hospital were developed in 2009 to close the gap between current practice and desired pharmacy practice as described in the Basel consensus statements. These recommendations served as the action plan and guiding document for all PSF-Canada pharmacists and the pharmacy management team to achieve the vision as defined by the consensus statements. These 24 recommendations, along with an additional 5 recommendations developed in 2011, constituted a proposed normative framework for the overall improvement process (Table 3). The recommendations encompassed 6 of the 7 themes set out in the 2008 Basel consensus statements: overarching statements on the future of hospital pharmacy, medication procurement, influences on prescribing, preparation and delivery of medicines, administration of medicines, and monitoring of medication practices. No recommendations were established for the seventh theme, human resources and training, because fulfilling the applicable consensus statements would require a coordinated approach on the part of national governing bodies and/or multiple stakeholders, something that is not feasible for a single hospital or institution.

Interventions to fulfill the PSF-Canada recommendations are listed in Table 4, along with their status in 2011 and 2012. These interventions include streamlining ordering and inventory processes for pharmacy supplies, conducting monthly audits to ensure accurate accounting of medication stores and supplies, developing training programs and policies to meet international guidelines and standards, and providing input on the creation of performance indicators for various key quality indicators, such as hand washing, sterilization, and use of disinfectants. Of the 29 PSF-Canada recommendations, 15 were deemed complete at the assessment in June 2012; another 10 were in progress, 1 had not yet been started, and 3 had been discontinued.

Table 1. Quantitative Analysis of Status of Pharmacy Practice in Relation to 2008 Basel Consensus Statements[2] at St Mary's Lacor Hospital, Gulu, Uganda

	Year; No. of Statements		
Status	2009	2011	2012
Not applicable	18	16	14
Not met	25	15	12
Partially met	14	19	14
Met	18	25	35
Total	75	75	75

DISCUSSION

The 2008 Basel consensus statements represent a shared vision of the future of hospital pharmacy, as defined by an international consortium of hospital pharmacists and pharmacy leaders. The selection of these statements as one of the guiding documents used by PSF-Canada to create its recommendations for the Lacor Hospital was deliberate, as they are similar in scope and focus to drug management standards used in the United States[4] and Canada.[5] For example, the Basel consensus statements parallel the Accreditation Canada Qmentum medication management standards, which detail all aspects of medication management, such as selection, procurement, labelling, storage, preparation, administration, and monitoring of medication use to achieve positive patient outcomes.[5] Use of predefined criteria to assess pharmacy services allows observers to objectively and clearly evaluate a hospital's medication management system, which is particularly important if the survey team does not include a pharmacy expert. More importantly, the Basel consensus statements were chosen because Lacor Hospital is located in a country that has yet to adopt national drug management standards, and these statements provide a systems-based approach to assessing and designing a medication management system. A patient-focused approach (such as that used by Accreditation Canada) is the ideal context in which to gauge a medication management system; however, such an approach assumes (and requires) that an adequate medication supply chain and monitoring system are already in place. This assumption may not be valid in places where the supply chain is strained and under-resourced. In addition, the Basel consensus statements offer a global perspective on assessing a medication management system; for example, terms commonly encountered in the standards of Accreditation Canada or the US Joint Commission may be familiar to health care professionals in Canada and the United States but may not be feasible or applicable elsewhere. The Basel consensus statements translate the ideas of medication management into terms and languages that are relevant and understandable across all cultures and contexts.

Table 2. Assessments of Pharmacy Practice at St Mary's Lacor Hospital in Relation to 2008 Basel Consensus Statements[2] (part 1 of 5)

Statement	2009	2011	2012
Overarching			
1. The overarching goal of hospital pharmacists is to optimize patient outcomes through the judicious, safe, efficacious, appropriate, and cost-effective use of medicines.	Partially met	Partially met	Partially met
2. At a global level, "Good Hospital Pharmacy Practice" guidelines based on evidence should be developed. These guidelines should assist national efforts to define standards across the levels, coverage, and scope of hospital pharmacy services and should include corresponding human resource and training requirements.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
3. The "five rights" (the right patient, right medicine, right dose, right route, and right time) should be fulfilled in all medicines-related activities in the hospital.	Met, except for drugs on back order	Met, except for drugs on back order	Met
4. Health authorities and hospital administrators should engage hospital pharmacists in all steps in the hospital medicines-use process.	Met	Met	Met
5. Health authorities should ensure that each hospital pharmacy is supervised by pharmacists who have completed specialized training in hospital pharmacy.	Met	Met	Met
6. The Chief Pharmacist/Director of Pharmacy should be the senior professional responsible for coordinating the judicious, safe, efficacious, appropriate, and cost-effective use of medicines in the hospital.	Met	Met	Met
7. Hospital pharmacists' authority over the medicine-use process should include authority over the selection and use of medicine-related devices such as administration devices, giving sets, infusion pumps, and computer-controlled dispensing cabinets.	Met	Met	Met
8. Hospital pharmacists should take responsibility for all medicines logistics in hospitals.	Met	Met	Met
9. Hospital pharmacists should serve as a resource regarding all aspects of medicines use and be accessible as a point of contact for health care providers.	Met	Met	Met
10. All prescriptions should be reviewed, interpreted, and validated by a hospital pharmacist prior to the medicine being dispensed and administered.	Not met	Not met	Not met
11. Hospital pharmacists should monitor patients taking medicines (daily or whenever medicines are changed) to assure patient safety, appropriate medicine use, and optimal outcomes. When resource limitations do not permit pharmacist monitoring of all patients taking medicines, patient-selection criteria should be established to guide pharmacist monitoring.	Not met	Not met	Not met
12. Hospital pharmacists should be allowed to access the full patient record.	Met	Met	Met
13. Hospital pharmacists should ensure that patients are educated on the appropriate use of their medicines.	Not met	Partially met	Met
14. Hospital pharmacists should provide orientation and education to nurses, physicians, and other hospital staff regarding best practices for medicines use.	Met	Met	Met
15. Undergraduate pharmacy curricula should include hospital-relevant content, and post-graduate training programs and specializations in hospital pharmacy should be developed.	Not met	Not met	Partially met
16. Hospital pharmacists should actively engage in research into new methods and systems to improve the use of medicines.	Not met	Not met	Partially met

continued on page 321

Table 2. Assessments of Pharmacy Practice at St Mary's Lacor Hospital in Relation to 2008 Basel Consensus Statements[2] (part 2 of 5)

Statement	2009	2011	2012
Medicines procurement			
17. The procurement process must be transparent, professional, and ethical to promote equity and access and to ensure accountability to relevant governing and legal entities.	Partially met	Met	Met
18. Procurement should be guided by the principle of procuring for safety.	Met	Met	Met
19. Procurement of pharmaceuticals is a complex process that requires pharmacist control and technically competent staff.	Partially met; staff should be increased	Partially met	Met
20. Operational principles for good procurement practice should be regularly reviewed and procurement models adapted to fit different settings and emerging needs in the most appropriate and cost-effective way.	Partially met	Partially met	Met
21. Procurement must be supported by strong quality assurance principles to ensure that poor quality medicines are not procured or allowed into the system. Proper storage to ensure maintenance of quality in the whole supply pipeline is mandatory.	Met	Met	Met
22. Procurement should not occur in isolation, but rather be informed by the formulary selection process.	Partially met	Met	Met
23. Good procurement must be supported by a reliable information system that provides accurate, timely, and accessible information.	Not met; new information system to be implemented	Partially met; significant improvement, still working on improvements	Met; bar coding and computerized system
24. A formal mechanism must be in place for pharmacists to request designated funds to procure medicines for their patients.	Met	Met	Met
25. Each pharmacy should have contingency plans for medicines shortages and purchases in emergencies.	Partially met	Partially met	Met
Influences on prescribing			
26. Hospitals should utilize a medicine formulary system (local, regional, and/or national) linked to standard treatment guidelines, protocols, and treatment pathways based on the best available evidence.	Partially met, not up to date	Met	Met
27. Hospital pharmacists should be members of pharmacy and therapeutics committees to oversee all medicines management policies and procedures, including those related to off-label use and investigational medicines.	Partially met	Met	Met
28. Hospital pharmacists should have a key role in educating prescribers at all levels of training on the access to and evidence for optimal and appropriate use of medicines, including the required monitoring parameters and subsequent prescribing adjustments.	Partially met	Partially met	Partially met
29. Hospital pharmacists should be involved in all patient care areas to prospectively influence collaborative therapeutic decision-making.	Partially met	Partially met	Partially met
30. Hospital pharmacists should be an integral part of all patient rounds to assist with therapeutic decision-making and advise on clinical pharmacy and patient safety issues.	Not met	Not met, but there is plan to increase pharmacist involvement in rounds	Not met
31. Hospital pharmacists should provide continuity of care by transferring patient medicines information as patients move between sectors of care.	Not met	Not met	Not met
32. Postgraduate clinical courses should be developed to prepare hospital pharmacists for collaborative prescribing of medicines, including instruction in legal and professional accountability; this role of hospital pharmacists should be promoted in the curricula of other health professionals.	Not applicable	Not applicable	Not applicable

continued on page 322

Table 2. Assessments of Pharmacy Practice at St Mary's Lacor Hospital in Relation to 2008 Basel Consensus Statements[2] (part 3 of 5)

Statement	2009	2011	2012
Preparation and delivery of medicines			
33. Hospital pharmacists should ensure that proper storage conditions are provided for all medicines used in the hospital.	Met	Met	Met
34. Hospital pharmacists should assume responsibility for the appropriate labelling and control of medicines stored throughout the hospital.	Met	Met	Met
35. Hospital pharmacists should ensure that compounded medicines are consistently prepared to comply with quality standards.	Not met	Partially met	Met
36. Hospital pharmacists should provide pharmacy-managed injectable admixture services using aseptic technique.	Not met	Not met	Not met
37. Hazardous medicines including cytotoxics should be prepared under environmental conditions that minimize the risk of contaminating the product and exposing hospital personnel to harm.	Not met	Partially met	Partially met
38. Hospital pharmacists should decrease the risk of medication errors by implementing evidence-based systems or technologies, such as automated prescription-filling, unit dose distribution, and bar coding systems.	Not applicable	Not applicable	Partially met
39. Hospital pharmacists should support the development of policies regarding the use of medicines brought into the hospital by patients, including the evaluation of appropriateness of herbal and dietary supplements.	Not met	Not met	Not met
40. Hospital pharmacists should assume responsibility for storage, preparation, dispensing, and distribution of investigational medicines.	Not applicable	Not applicable	Not applicable
41. Hospital pharmacists should implement systems for tracing medicines dispensed by the pharmacy (to facilitate recalls, for example).	Not met	Partially met in HIV clinic	Partially met
Administration of medicines			
42. Hospital pharmacists should ensure that the information resources needed for safe medicines preparation and administration are accessible at the point of care.	Not met	Not met	Partially met
43. Hospital pharmacists should ensure that allergies are accurately recorded in a standard location in patient records and evaluated prior to medicines administration.	Met	Met	Met
44. Hospital pharmacists should ensure that medicines are packaged and labelled to ensure identification and to maintain integrity until immediately prior to administration to the individual patient.	Not met	Met in outpatient department, not on the ward	Met in outpatient department
45. Where medicines are labelled for individual patients, full details to ensure safe administration should be included, for example, name of medicine, route, and, where appropriate, dose in mass and volume.	Met	Met	Met
46. Storage of concentrated electrolyte products (such as potassium chloride and sodium chloride) and other high-risk medicines on patient wards should be eliminated by dispensing ready-to-administer dilutions, or, if necessary, storing such products distinctly labelled in separate or secure areas.	Not met	Not met for magnesium and calcium	Partially met
47. Health care professionals responsible for administering injectable medicines and chemotherapy should be trained in their use, hazards, and necessary precautions.	Not met	Partially met	Partially met
48. Doses of chemotherapy and other designated medicines (based upon risk assessment) should be independently checked against the original prescription by two health care professionals at the point of care prior to administration.	Not met	Not met	Not met
49. Pharmacists should ensure that strategies and policies are ` implemented to prevent wrong route errors, including, for example, labelling of intravenous tubing near insertion site to prevent misconnections, and use of enteral feeding catheters that cannot be connected with intravenous or other parenteral lines.	Not met	Not met	Not met
50. Vinca alkaloids should be diluted, ideally in a minibag and/or large syringe (for pediatric patients), and dispensed with special labelling precautions in order to prevent inadvertent intrathecal administration.	Not met	Not met	Not met

continued on page 323

Table 2. Assessments of Pharmacy Practice at St Mary's Lacor Hospital in Relation to 2008 Basel Consensus Statements[2] (part 4 of 5)

Statement	2009	2011	2012
51. Oral syringes that are distinctly different from hypodermic syringes should be used to prevent injection of enteral or oral medicines, especially in pediatric patients.	Not applicable	Not applicable	Not applicable
52. Medicines not commercially available for neonatal and pediatric patients should be prepared by the hospital pharmacy.	Not met	Not met	Met
53. Standard concentrations of medicines should be determined, procured, and prepared for all patients, and especially for pediatric, neonatal, and critical care patients.	Partially met, pediatric BNF on the ward	Partially met	Partially met
54. Hospital pharmacists should be responsible for determining which medicines are included in ward stock and for standardizing the storage and handling of ward medicines.	Partially met, quantity not respected	Partially met	Met
55. Hospital pharmacists should develop simple, rules-based approaches to advancing patient safety; for example, when a large number of dosage units are needed to give a dose (more than two tablets, vials, etc.), the prescription should be verified prior to administration.	Not met	Not met	Not met
56. Hospital pharmacists should ensure the development of quality assurance strategies for medicines administration, including the use of observation methodology to detect errors and identify priorities for improvement.	Not met	Not met	Partially met
57. The medicines administration process should be designed such that transcription steps between the original prescription and the medicines administration record are eliminated.	Partially met	Met	Met
Monitoring of medicines			
58. A reporting system for defective medicines should be established and maintained to monitor and take the necessary action to minimize identified risks. Reports of defective or substandard medicines should be sent to regional or national pharmacovigilance reporting programs where these are available.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
59. A reporting system for adverse drug reactions should be established and maintained, and the necessary action should be taken to minimize identified risks. Reaction reports should be sent to regional or national pharmacovigilance reporting programs where these are available.	Met	Met	Met
60. A reporting system for medication errors should be established and maintained, and the necessary action should be taken to minimize identified risks. Reports of medication errors should be sent to regional or national medication error reporting programs where these are available.	Not met	Not met	Not met
61. Hospital medication practice should be self assessed and data trended internally and compared with best practice in other institutions to improve safety, clinical effectiveness, and cost-effectiveness.	Not met	Partially met	Partially met
62. Hospital medication practices should be reviewed by an external quality assessment accreditation program. Hospitals should act on reports following regular external quality assessment inspections to improve the quality and safety of their practices.	Not met	Not met	Partially met
63. Pharmacists' clinical interventions should be documented in the patient record. These data should be regularly analyzed to improve the quality and safety of medication practice.	Not met	Not met	Not met
64. Trigger tools should be used to provide quantitative data on adverse drug events in the hospital. These data should be regularly reviewed to improve the quality and safety of medication practices.	Not met	Not met	Not met
65. Advanced clinical pharmacy services should manage medication therapy to optimize therapeutic outcomes. Outcomes data from such programs should be regularly reviewed and used to improve the quality and safety of medication practices. Examples include management of anticoagulation therapy, antimicrobial therapy, and therapeutic drug monitoring.	Not met	Not met	Partially met (antimicrobial stewardship)

continued on page 324

Table 2. Assessments of Pharmacy Practice at St Mary's Lacor Hospital in Relation to 2008 Basel Consensus Statements[2] (part 3 of 5)

Statement	2009	2011	2012
Human resources and training			
66. At a national level, health authorities should bring together stakeholders to collaboratively develop evidence-based hospital pharmacy human resource plans aligned to meet health needs and priorities across public and private sectors that optimize patient outcomes.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
67. Key stakeholders should ensure that workforce education, training, competency, size, and capacity are appropriate to the levels, coverage, scope, and responsibilities of all cadres providing pharmacy services.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
68. Hospital pharmacy human resource plans should cover all cadres and be linked to health targets. Such plans should describe strategies for human resource education and training, recruitment and retention, competency development, salary and career progression pathways, gender-sensitive policies, equitable deployment and distribution, management, and roles and responsibilities of stakeholders for implementation.	Not met	Met	Met
69. Hospitals should maintain human resource information systems that contain basic data for planning, training, appraising, and supporting the workforce. Data should be collated at a national level to improve human resource strategy.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
70. Health authorities, educators, professional associations, and employers should address pharmacy human resource shortages through sustainable strategies for workforce supply, recruitment, and retention, particularly in rural and remote areas.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
71. The training programs of mid-level pharmacy human resources (technicians or the equivalent) should be nationally formalized, harmonized, and credentialled for the attainment of defined competencies within a defined scope of practice.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
72. Hospital human resource policies should be founded in ethical principles, equal opportunity, and human rights and be compliant with labour regulations, guidelines, and hospital pharmacy practice standards.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
73. Nationally, levels of practice and associated competency requirements should be defined and regularly assessed to form a competency framework for all cadres.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
74. Hospitals should use a nationally accepted competency framework to assess individual human resource training needs and performance.	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment	Not applicable; requires national-level assessment
75. The hospital pharmacy human resource evidence gap should be explored and addressed through a strategic research agenda.	Not met	Met; hospital has hired a new pharmacist and is now taking on pharmacy interns	Met

BNF = British National Formulary.

The limitations of this study included inability to assess 14 of the criteria in the Basel statements at the hospital level, as they require a coordinated approach by national governing bodies and/or multiple stakeholders. For example, under the seventh theme of the consensus statements, human resources and training, promotion of a national-level strategy to develop evidence-based human resource plans and training were judged by the PSF-Canada pharmacist advisors and the Lacor Hospital executive team to be unattainable within the proposed time frame.

At the time of publication, in late 2013, the assessment of progress at the Lacor Hospital was ongoing. At each assessment point so far, certain consensus statements that had not been fully realized were being actively addressed. As such, there was a need for a category ("partially met") to accurately reflect the work achieved thus far. Creation of this category permitted interpretation of the outcomes achieved to date, although the interpretation can vary by observer or assessor. In this case study, the assessors were the PSF-Canada pharmacist advisor

Table 3. PSF-Canada Recommendations in Relation to Themes of 2008 Basel Consensus Statements

PSF-Canada Recommendation, by Theme	2012 Assessment
Overarching statements	
Establish middle management positions within the Department of Pharmacy	Completed
Procurement	
Develop a communication plan to inform clinicians about medication back orders and supply shortages	Completed
Create a buyer position within the Department of Pharmacy to support the procurement of medications and medical supplies	In progress
Separate the accounting of medical supplies from medications	Completed
Update the drug accounting process to ensure accuracy of medication expenditures at St Mary's Lacor Hospital	Completed
Influences on prescribing	
Reinstate the Medicine and Therapeutics Committee	Completed
Create a patient medication profile for inpatients and outpatients at St Mary's Lacor Hospital	In progress
Collaborate with Gulu University to implement and develop pharmacy training programs*	In progress
Collaborate with the Lacor School of Nursing to develop and deliver pharmacology sessions for nursing students*	Completed
Preparation and delivery	
Limit access to pharmacy stores to designated pharmacy staff	Completed
Review the control of ward stock medications and supplies to avoid diversion	In progress
Utilize the e-learning program to train nurses and pharmacy staff on appropriate intravenous solution preparation	Not started
Upgrade the pharmacy sterile room to meet current practice standards	Discontinued
Provide appropriate training to staff involved in the preparation and administration of cytotoxic medications	Completed
Establish a quality assurance program for nonsterile compounding*	In progress
Administration	
Reassess minimum and maximum levels for ward stock medications and medical supplies on the wards and in the pharmacy	Completed
Create a policy detailing minimum and maximum levels for ward stock medications	Completed
Increase control and access to ward stock medications on wards	In progress
Assume responsibility for replenishment of ward stock medications	In progress
Review infection control procedures as they relate to the administration and dispensing of medications	In progress
Participate on the St Mary's Lacor Hospital Infection Control Committee*	Completed
Create a strategy to reduce prescription transcriptions at St Mary's Lacor Hospital	Completed
Procure smaller-volume parenterals for pediatric patients	Completed
Implement a direct refill policy for outpatients at St Mary's Lacor Hospital	Discontinued
Monitoring of medication practice	
Conduct a cost-effectiveness evaluation of in-house, large-volume parenteral production	Completed
Create a medication cost-awareness program to inform clinicians about the cost of different medical therapies	In progress
Conduct a drug-use audit on high-cost medications to promote best prescribing practices at St Mary's Lacor Hospital	In progress
Create medical directives for allied health care professionals	Discontinued
Conduct an audit of drug administration to patients, to evaluate frequency and rationale for missing medication doses*	Completed
Human resources and training	
NA	NA

NA = not applicable, PSF-Canada = Pharmaciens sans frontières Canada (Pharmacists Without Borders—Canada).
*New recommendations developed by PSF-Canada in 2011, additional to original 24 recommendations made in 2009.

(R.V.) and the PSF-Canada pharmacist on site. The increase in the number of "partially met" recommendations noted in the 2011 assessment was related to the new PSF-Canada recommendations put forth that year.

To the authors' knowledge, this is the first descriptive study illustrating the use of the 2008 Basel consensus statements as a normative framework to assess, realign, and monitor pharmacy practice in a tertiary care hospital. Further studies are required to validate the observations described in this article. However, the Basel consensus statements do allow assessment of a hospital's pharmacy practice against the preferred vision of hospital pharmacy practice and represent a useful tool for realigning and monitoring pharmacy practice in the hospital setting.

CONCLUSIONS

The 2008 Basel consensus statements represent a useful framework for assessing, realigning, and monitoring pharmacy practice because they are international in emphasis and are not limited to a particular culture, country, or context. Fourteen

Table 4. Status of PSF-Canada Recommendations (2011 and 2012) (part 1 of 2)

PSF-Canada Recommendations	April 2011	June 2012
Establish middle management positions within the Department of Pharmacy	*In progress*: Pharmacy organizational chart being drafted	*Completed*: Designated manager established for pharmacy satellites
Develop a communication plan to inform clinicians about medication back orders and supply shortages	*Completed*: Weekly or biweekly reports sent to prescribers	*Completed*: Reports generated with real-time data; information on new items or back-ordered medications disseminated, along with possible alternatives
Create a buyer position within the Department of Pharmacy to support the procurement of medications and medical supplies	*In progress*: Purchasing procedure being drafted	*In progress*: Recruitment of procurement officer under discussion with hospital administration
Separate the accounting of medical supplies from medications	*Completed*: Drug utilization report to be reviewed by Medicine and Therapeutics Committee	*Completed*: Medications and medical supplies recoded, computer-generated utilization reports now available based on category and location of use
Update the drug accounting process to ensure accuracy of medication expenditures at St Mary's Lacor Hospital	*In progress*	*Completed*: Drug and medical supplies expenditures now available for each ward or clinic
Reinstate the Medicine and Therapeutics Committee	*Completed*: Formulary under review	*Completed*: Ongoing formulary review and development of clinical guidelines for critical care, maternity and women's health, internal medicine, pediatrics, surgery
Create a patient medication profile for inpatients and outpatients at St Mary's Lacor Hospital	*In progress*: Ongoing discussions with information technology department	
Collaborate with Gulu University to implement and develop pharmacy training programs*	*In progress*	*In progress*: Pharmacy technician certificate program developed and implemented
Collaborate with the Lacor School of Nursing to develop and deliver pharmacology sessions for nursing students*	NA	*Completed*: Pharmacists involved in teaching pharmacology courses at diploma and certificate level
Limit access to pharmacy stores to designated pharmacy staff	*In progress*	*Completed*: Keys to pharmacy stores kept in secure location to which only authorized personnel have access
Review the control of ward stock medications and supplies to avoid diversion	*In progress*: Historical utilization statistics created	*In progress*: Wards have preprinted order sheets; monthly audits being conducted; ongoing audits to adjust stock levels
Utilize the e-learning program to train nurses and pharmacy staff on intravenous solution preparation	*Not started*: Program being reviewed with nursing leadership	
Upgrade the pharmacy sterile room to meet current practice standards	*Not started and discontinued:* not cost-effective to prepare IV solutions locally	*Recommendation discontinued*
Provide appropriate training to staff involved in the preparation and administration of cytotoxic medications	*Completed*	*Completed*: Dilution charts developed, ongoing quality assurance and training provided to meet international guidelines and standards
Establish a quality assurance program for nonsterile compounding*	*In progress*	*In progress*: Quality assurance guidelines being developed for nonsterile compounding
Reassess minimum and maximum levels for ward stock medications and medical supplies on the wards and in the pharmacy	*In progress*: Performance indicators being developed	*Completed*: Testing of pharmacy and ward performance indicators
Create a policy detailing minimum and maximum levels for ward stock medications	*Not started*	*Completed*: Standard operating procedure completed and under review
Increase control and access to ward stock medications on wards	*In progress*: Ward stock checklist being developed	*In progress*: Ward ordering lists rolled out to all wards
Assume responsibility for replenishment of ward stock medications	*Not started*	*In progress*: Pilot pharmacy delivery of ward stock
Review infection control procedures as they relate to the administration and dispensing of medications	*In progress*	*In progress*: Infection manual completed, pending approval by hospital executive team

continued on page 327

Table 4. Status of PSF-Canada Recommendations (2011 and 2012) (part 2 of 2)

PSF-Canada Recommendations	April 2011	June 2012
Participate on the St Mary's Lacor Hospital Infection Control Committee*	NA	*Completed*
Create a strategy to reduce prescription transcriptions at St Mary's Lacor Hospital	*Completed*	*Completed*
Procure smaller-volume parenterals for pediatric patients	*Completed*	*Completed*
Implement a direct refill policy for outpatients at St Mary's Lacor Hospital	*Not started and discontinued*: To be reassessed at a later time	
Conduct a cost -effectiveness evaluation of in-house, large-volume parenteral production	*Completed*: Not cost-effective	
Create a medication cost-awareness program to inform clinicians about the cost of different medical therapies	*Not started*	*In progress*: In discussion with administration to roll out clinical guidelines
Conduct a drug-use audit on high-cost medications to promote best prescribing practices at St Mary's Lacor Hospital	*In progress*: Ceftriaxone drug-use evaluation in pediatric patients under review	*In progress*: Presentation of results to staff; other drug-use evaluation activities being developed
Create medical directives for allied health care professionals	*Not started and discontinued*: To be reassessed at a later time	
Conduct an audit of drug administration to patients, to evaluate frequency and rationale for missing medication doses*	NA	*Completed*: Follow-up audit completed, medication administration form being revised

NA = not applicable, PSF-Canada = Pharmaciens sans frontières Canada (Pharmacists Without Borders—Canada).
*New recommendations developed by PSF-Canada in 2011, additional to original 24 recommendations made in 2009.

statements were deemed not applicable to assessments of pharmacy practice in an individual hospital, as they require national-level assessment. Further studies are required to validate the observations reported here.

References

1. Annex 8: Joint FIP/WHO guidelines on good pharmacy practice: standards for quality of pharmacy services. In: *Forty-fifth report of the WHO Expert Committee on specifications for pharmaceutical preparations.* WHO Tech Rep Ser 961. Switzerland (Geneva): World Health Organization; 2011 [cited 2012 Sep 15]. p. 310-23. Available from: http://apps.who.int/medicinedocs/documents/s18676en/s18676en.pdf
2. The Basel statements on the future of hospital pharmacy. *Am J Health Syst Pharm*. 2009;66(5 Suppl 3):S61-6.
3. 2*006 FIP global pharmacy workforce and migration report*. The Hague (Netherlands): International Pharmaceutical Federation; 2009 [cited 2012 Sep 15]. Available from: www.fip.org/programmesandprojects_pharmacyeducationtaskforce_humanresources
4. Medication management [standard]. In: *Hospital accreditation standards*. Oak Brook (IL): The Joint Commission on Accreditation of Healthcare Organizations; 2008.
5. Managing medications [standards]. Ottawa (ON): Accreditation Canada; 2012 [cited 2012 Sep 15]. Available from: www.accreditation.ca/accreditation-programs/qmentum/standards/managing-medications/

Jennifer Poh, BScPhm, ACPR, is a PharmD student with the Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto, Ontario. At the time of this study, she was working at the Children's Hospital of Eastern Ontario, Ottawa, Ontario.

Régis Vaillancourt, BPharm, PharmD, FCSHP, FFIP, is Director of Pharmacy, Children's Hospital of Eastern Ontario, Ottawa, Ontario. He also participates in the World Hospital Pharmacy Research Consortium.

Diane Lamarre, BPharm, MSc, is President of Pharmaciens sans frontières Canada and Professor of Clinical Pharmacy, Université de Montréal, Montréal, Quebec.

Josephine Oyella, BPharm, is Director of Pharamcy, St Mary's Lacor Hospital, Gulu, Uganda.

Competing interests: Josephine Oyella received travel funding from the Pharmabridge Program. None declared for other authors.

Address correspondence to:
Dr Régis Vaillancourt
Children's Hospital of Eastern Ontario
401 Smyth Road
Ottawa ON K1H 8L1

e-mail: rvaillancourt@cheo.on.ca

Acknowledgements
The authors thank Gahda Shaka, Lisa Brander, and Doret Cheng for volunteering their time and expertise in serving PSF-Canada as consultant pharmacists for the Lacor Hospital mission. The authors also thank the Teasdale-Corti Foundation and the Marcelle and Jean Coutu Foundation for their support throughout this program. Annie Pouliot revised the manuscript before submission.