

Canadian Society of
Hospital Pharmacists



Société canadienne des
pharmaciens d'hôpitaux

Health Accord
% Lynn Taylor
M4M401, Faculty of Medicine
Memorial University of Newfoundland
300 Prince Philip Drive
St. John's, NL, A1B 3V6
Canada

July 22, 2021

RE: Canadian Society of Hospital Pharmacists NL Branch Health Accord Submission 2021

We thank you for the opportunity to provide the following submission.

The Canadian Society of Hospital Pharmacists (CSHP) represents pharmacy professionals working in hospitals and other collaborative health care settings. CSHP seeks excellence in pharmacy practice and patient care through the advancement of safe and effective medication use. The Newfoundland and Labrador Branch of CSHP represents the voice of hospital pharmacists currently practicing within this province.

The Health Accord Interim Report has identified several areas of concern. We believe that hospital pharmacists have an essential role to play in improving health and health outcomes for Newfoundlanders and Labradorians. In the following submission, we provide recommendations and evidence for how hospital pharmacists help fulfil the vision of the Health Accord. Hospital pharmacists can improve the quality of team-based care, reduce health care costs, and better serve Newfoundlanders and Labradorians when practicing to their full scope. In addition, optimizing technology within hospitals can improve patient safety and lead to efficiency and cost savings.

Thank you for your consideration.

Sincerely,

CSHP NL Branch

Heather Slaney
Clinical Pharmacist I
Janeway Children's Health and
Rehabilitation Centre
Eastern Health
heather.slaney@easternhealth.ca

Chelsea Rowe
Clinical Pharmacist I
James Paton Memorial
Regional Health Centre
Central Health
chelsea.rowe@centralhealth.nl.ca

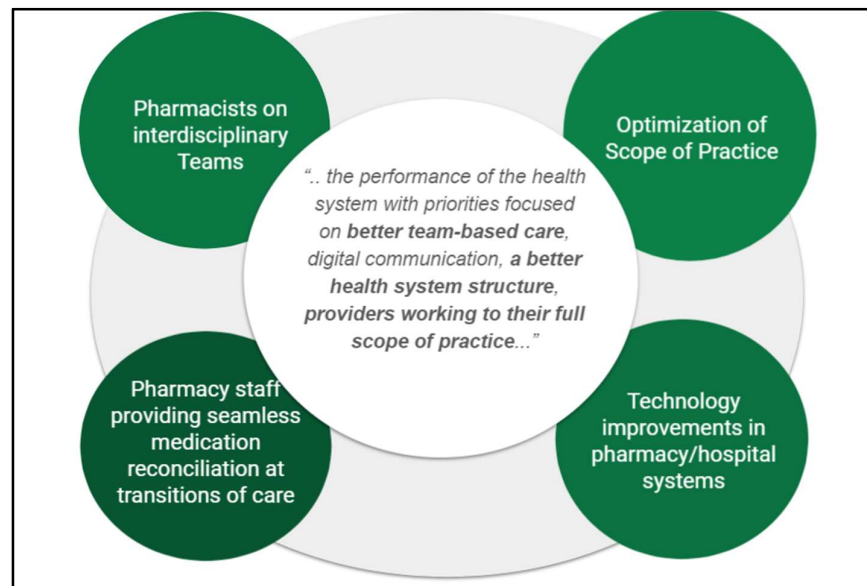
Lorie Carter
Clinical Pharmacist II
Health Sciences Centre
Eastern Health
lorie.carter@easternhealth.ca

Executive Summary: CSHP Submission for Health Accord 2021

The Health Accord NL has identified three major areas of concern. Our submission relates to one of those areas:

“The performance of the health system with priorities focused on better team-based care, digital communication, a better health system structure, providers working to the full scope of their practice and seniors care.”

The four recommendations made in this submission are broad-reaching and interconnected. As we will highlight, including more pharmacists on interdisciplinary care teams improves patient outcomes and saves healthcare costs. This is achievable by facilitating regulated pharmacy technicians to practice to full scope such as assisting with medication reconciliation at transitions of care. By utilizing both regulated technicians and pharmacists integrated into team-based care, pharmacy-led medication reconciliation improves quality of care and patient safety. Expanding a hospital pharmacists’ scope of practice to include independent prescribing and collaborative prescribing increases their already high value as members of the care team. In addition, updating technologies in hospital pharmacies enables pharmacy staff to spend more time providing the multiple patient care services associated with improved outcomes and reduced healthcare costs.



Despite their institutional place of work, hospital pharmacists contribute to high quality community based health care by helping to keep people out of hospital (reduced length of stay and readmission rates), and reducing medication burden by optimizing medication use and chronic disease management, preventing medication-related harm, deprescribing unnecessary medications, and contributing to antimicrobial and opioid stewardship activities.

Issue#1: According to the Health Accord, Newfoundland and Labrador has the worst health system performance in Canada. Improving health and health outcomes for Newfoundlanders and Labradorians requires increasing the quality of care provided in health systems. Patients transitioning from home, to community care, to regional hospitals, and to tertiary care are in need of seamless, high-quality medication management and medication education with a patient-centered focus. Interdisciplinary teams in hospitals across Newfoundland and Labrador have low and inconsistent pharmacist participation on care teams.

Recommendation # 1: Incorporating more pharmacists onto inpatient hospital care teams and onto outpatient care teams will improve team-based care, patient outcomes, and seamless care while reducing health care costs.

- Pharmacists on clinical teams prevent and resolve issues with medication therapy, provide patient-focused education about medications, proactively contribute to interprofessional care rounds, and facilitate seamless care with other organizations during admission and discharge (e.g. medication reconciliation).¹ They contribute to efficiency by providing medication stewardship (antibiotic, opioid, and other), avoiding medication harm, and deprescribing unnecessary medications.
- The evidence shows that team-based hospital pharmacists prevent readmissions, reduce length of stay, reduce health care costs, reduce the risk of medication-related harm, and improve patient outcomes in many areas of hospital practice.^{3-8,11}
- Accreditation Canada Recommends full integration of pharmacists on interdisciplinary teams as a high priority recommendation.²
- Pharmacists working on care teams have been consistently shown to save costs well beyond what they earn in salary. In multiple studies around the world, results show that a team-based hospital pharmacist saves the health care system \$4 to \$5 for every \$1 they earn in salary, for example by reducing readmission rates.^{9,10}
- Currently only a small number of hospitalized patients are serviced by team-based pharmacists across sites within Newfoundland and Labrador, estimated at 20% (see detailed table on page 10-12). This is significantly lower than most hospitals in Canada.¹²
- Priority areas for integration of pharmacists onto interdisciplinary teams include those with the most robust evidence for benefit such as internal medicine, oncology, and geriatrics, as well as those patient populations experiencing poor outcomes in Newfoundland and Labrador such as cardiology and stroke.
- Elderly patients in particular are at high risk of medication-related harm due to use of multiple concurrent medications (polypharmacy), frailty, and risks of adverse medication effects such as falls and confusion.^{13,14} Pharmacists have the ideal skill-set to help optimize medication use in this patient population through deprescribing (discontinuing inappropriate medications), and this is supported strongly by the evidence. Pharmacists can effectively aid Newfoundland and Labrador's aging population seamlessly transition from acute care to community or long-term care by reducing medication-related errors and improving patient outcomes. By doing this they deliver substantial cost-savings to the healthcare system.^{13, 16-23, 25,26}

Issue #2: The Health Accord NL envisions improving health system performance by enabling providers to work to their full scope of practice. Neither hospital pharmacists nor regulated pharmacy technicians in Newfoundland and Labrador hospitals are currently working to their full scope of practice, to the detriment of patient care.

Recommendation #2: Expanded scope of pharmacist practice to include collaborative or independent prescribing will maximize the benefit pharmacists provide during provision of patient care. Utilization of pharmacy technicians working to full scope, for example by mixing/technical preparation of medication, completing drug access/special authorization paperwork and the collection of best possible medication histories, will enable pharmacists in hospitals to be integrated onto more interdisciplinary care teams.

- Pharmacist scope of practice in Newfoundland and Labrador is the most narrow of the Atlantic provinces, and lags far behind the advances seen in Alberta, the United Kingdom, and elsewhere around the world.²⁷
- Pharmacists currently have some limited authority to prescribe, for example adaptation or management of a prescription by making a therapeutic substitution, changing the drug dose, formulation, or regimen, and reviewing/extending a prescription for continuity of care.
- With the limited participation of pharmacists in team-based care, many pharmacists are not fully using their currently permissible scope of practice.
- Pharmacists in Newfoundland and Labrador do not have either collaborative or independent prescribing authority, or the ability to order and interpret laboratory tests to monitor drug therapy.
- Further expansion of pharmacist scope in this province to meet our national and international counterparts is needed in order to maximize the benefit pharmacists provide to patients and care teams in fully managing medication therapy.
- Regulation/licensure of pharmacy technicians in this province is relatively new, and currently hospital technicians are not working to full scope as they have not taken on many of the services now permissible by provincial standards and regulations.
- By expanding their staffing and facilitating regulated pharmacy technicians to work more fully to scope, existing pharmacist staff members can be freed up to provide direct patient care on teams within hospitals, thus practicing closer to their optimal scope and achieving the benefits outlined in recommendation #1. This would occur by pharmacy technicians taking over the technical and administrative duties that are within their scope and that are currently being performed by pharmacists. This is much less costly than hiring more pharmacists, and potentially more feasible in rural areas from a human resources perspective.

Issue #3: Medication reconciliation is an important safety and quality step in the transitions of patients throughout the healthcare system. Medication reconciliation in our hospitals is currently a nursing responsibility, despite extensive evidence that shows improved patient outcomes associated with pharmacy-led medication reconciliation.

Recommendation #3: In order to improve medication safety and patient outcomes, pharmacy staff should perform medication reconciliation for a larger proportion of hospitalized patients.

This can be achieved by implementing pharmacy technician-collected Best Possible Medication Histories in emergency departments, and by integrating more clinical pharmacists onto interdisciplinary teams.

- Medication reconciliation requires a systematic and comprehensive review of all the medications a patient is taking to ensure that medications being added, changed or discontinued are carefully evaluated. It is a component of medication management and will inform and enable providers to make the most appropriate prescribing decisions for the patient ³³
- Medication reconciliation is currently a nursing practice responsibility within hospitals in Newfoundland and Labrador, however extensive evidence exists in support of pharmacy-led medication reconciliation.
- Medication reconciliation performed by pharmacy staff is more complete than that performed by other providers,³⁴ and pharmacist-led medication reconciliation programs have been shown to substantially reduce the rate of all-cause readmissions, all-cause emergency department (ED) visits, and adverse drug event related hospital revisits. ^{24, 28-31,, 34-37}
- Pharmacist-led medication reconciliation has been shown to be cost-effective, with pharmacists saving more than what they earn in salary in reduced errors and patient visits/admissions ³⁷

Issue #4: Digital technologies that have the potential to prevent errors and improve efficiency are under-utilized in hospitals and hospital pharmacies in Newfoundland and Labrador.

Recommendation #4: The quality of patient care can be improved by updating pharmacy systems and technologies within the hospitals of Newfoundland and Labrador. This in turn helps to address problems 1 through 3 by preventing errors and medication-related harm, and improving efficiency to free up pharmacist and pharmacy technician time to practice to full scope.

- Examples of pharmacy-related technologies available elsewhere but not implemented or only partially implemented in this province include use of bedside barcode scanning, automated dispensing cabinets, computerized or electronic medication administration records (CMAR/EMAR), computerized provider order entry (CPOE), prescription scanning, camera verification, and gravimetric verification (weight or density based confirmation of intravenous mixtures).
- These technologies all have the potential to improve patient safety by preventing errors and reducing medication-related patient harm, and/or by improving efficiency thus allowing pharmacists and pharmacy technicians to practice to full scope and become more integrated with interdisciplinary teams where they reduce costs and improve outcomes for patients. ^{38 - 46}
- Survey data from hospitals across the country indicates that Newfoundland and Labrador hospitals are not keeping pace with the adoption of digital technology use shown to be associated with patient safety ¹²

Summary of Evidence: CSHP Submission for Health Accord 2021

Introduction

The Canadian Society of Hospital Pharmacists (CSHP) represents pharmacy professionals working in hospitals and other collaborative health care settings. CSHP seeks excellence in pharmacy practice and patient care through the advancement of safe and effective medication use. The Newfoundland and Labrador Branch of CSHP represents the voice of hospital pharmacists currently practicing within this province.

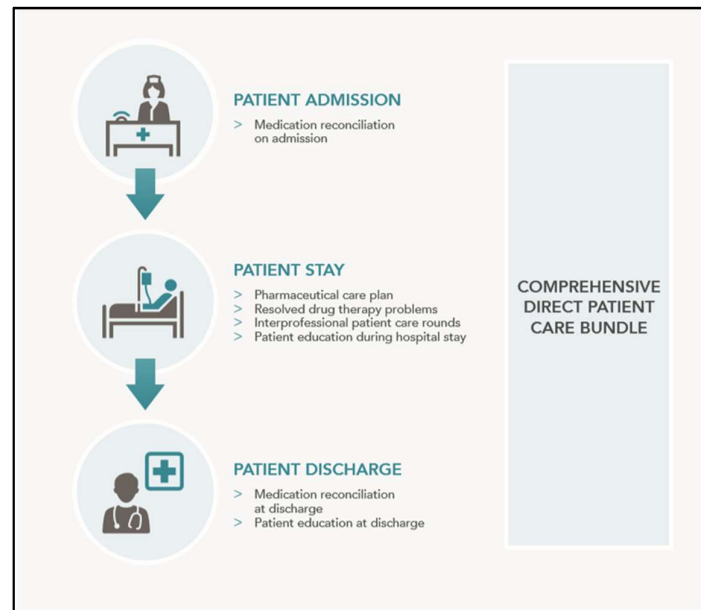
We recognize that the Pharmacist's Association of Newfoundland and Labrador has already presented an excellent submission pertaining to how community pharmacists can help the Health Accord Task Force achieve its vision. They have already covered the evidence for community pharmacist management of hypertension, diabetes, and urinary tract infections, and make the case for community pharmacists working to full scope such as increasing prescribing capabilities, and inclusion of pharmacists on community-based teams. We support their recommendations, and are making this submission to add evidence for the importance of pharmacists in hospital settings.

Issue #1: According to the Health Accord, Newfoundland and Labrador has the worst health system performance in Canada. Improving health and health outcomes for Newfoundlanders and Labradorians requires increasing the quality of care provided in health systems. Patients transitioning from home, to community care, to regional hospitals, and to tertiary care are in need of seamless, high-quality medication management and medication education with a patient-centered focus. Interdisciplinary teams in hospitals across Newfoundland and Labrador have low and inconsistent pharmacist participation on care teams.

Recommendation # 1: Incorporating more pharmacists onto inpatient hospital care teams and onto outpatient care teams will improve team-based care, patient outcomes, and seamless care while reducing health care costs.

1. Pharmacists on teams perform pharmaceutical care as a comprehensive care bundle

Pharmacists on interdisciplinary hospital teams provide comprehensive patient care that incorporates a number of different activities and tasks. In 2013, CSHP published a set of national clinical pharmacist key performance indicators (cpKPIs) intended to improve quality of care and advance practice towards evidence-informed patient care. These activities represent the clinical pharmacist services most strongly associated with improved patient outcomes and/or reduced healthcare costs, and represent the essential quality activities that should be performed by hospital pharmacists who have been integrated onto inpatient care teams¹:



Medication reconciliation on admission to hospital and clarification of discrepancies to ensure accurate and comprehensive medication information across transitions of care.

Creating a pharmaceutical care plan for each patient, assessing the medical problems and drug therapies and taking responsibility for identifying, resolving, and preventing drug therapy problems

Active participation in interprofessional care rounds, to proactively improve medication management, improve outcomes, make interventions, and provide information to the team.

Interactive patient education during hospital stay and at discharge about a patient's disease and medications, including education about newly started medications.

Medication reconciliation at discharge to provide comprehensive information to patients/caregivers, to ensure effective and safe use of medications, and improve patient adherence to the treatment plan. Specifically, hospital pharmacists will compare home medications with current hospital medications and the prescriber's discharge medication orders to identify differences or discrepancies and clarify them prior to discharge.

2. Better team-based care

The evidence shows that team-based pharmacists prevent readmissions, reduce length of stay, reduce health care costs, reduce the risk of medication-related harm, and improve patient outcomes in many areas of hospital and outpatient practice.

Accreditation Canada 2021 Standards recommend that pharmacists should be an integral part of interdisciplinary teams in hospitals. Through a proactive role in patient-engaged medication management, pharmacists can make the medication use process safer. Recommended priority clinical activities include preventing and resolving issues with medication therapy (e.g. pharmaceutical care), providing education about medications, actively participating on interprofessional care rounds, and facilitating seamless care with other organizations during admission and discharge, including medication reconciliation.² Pharmacists should play a role in initiating, monitoring, and discontinuing medication orders during transitions of care. Pharmacists also support the team overall, by providing drug information, promoting evidence-informed medication use, and assisting with medication access.

3. Improved patient outcomes

There is a broad range of evidence available in the literature supporting improved patient outcomes and reduced costs achieved by integrating pharmacists into interdisciplinary care teams. The following are a few key examples:

Internal medicine: The COLLABORATE study took place at 3 tertiary care teaching hospitals in Edmonton, Alberta on internal medicine clinical teaching units and primary health care teams. The team-based pharmacists provided proactive clinical services. The most common patient diagnoses were diabetes, chronic obstructive pulmonary disease, community acquired pneumonia and heart failure. The most common pharmacist recommendations were to start new drug therapy, change drug doses, or stop drug therapy in order to improve or maintain efficacy or reduce toxicity. Teams including a clinical pharmacist had improved quality of medication use (for example adherence to guidelines) and reduced rates of readmission to hospital at 3 months (36.2% vs 45.5%, adjusted OR: 0.63, 95% CI: 0.42 - 0.94), compared with usual team-based care without a clinical pharmacist. This represents a relative reduction of over 20%. 93.3% of recommendations by a pharmacist were accepted by the team.³

Clinical Pharmacists Reduce Mortality: The Bond database study looked at 2.8 million patients and 7.9 million hospitalizations across 885 hospitals. Investigators studied the chance of in-hospital death compared with pharmacist staffing levels and clinical pharmacist services, adjusted for severity of illness. The study found reduced mortality shown with an increasing number of clinical pharmacists per 100 beds ($p = 0.023$).⁴ Several clinical pharmacist services were associated with reduced mortality rates, reported as deaths prevented per hospital in 1 year: drug use evaluation (5.37, $p=0.016$), in-service education (18.38, $p=0.037$), adverse drug reaction management (23.3, $p=0.012$), drug protocol management (29.89, $p=0.017$), participation on the cardiopulmonary

resuscitation team (45.84, $p = 0.009$), participation on medical rounds (54.65, $p=0.021$), and admission drug histories (107.78, $p=0.001$).

Critical Care: In a 2019 systematic review and meta-analysis of 14 studies, the intervention of inclusion of critical care pharmacists on multidisciplinary intensive care unit (ICU) teams was significantly associated with reduced likelihood of mortality, reduced ICU length of stay, and significantly reduced preventable or non-preventable adverse drug events. Length of stay influences hospital costs and quality of life and ICU patients have complex drug therapy issues requiring specialized care.⁵

Outpatient Care: At family medicine clinics at a major teaching hospital in the United States clinical pharmacists co-managing hypertension with physicians made recommendations for higher dosages or additional medications. Average blood pressure decreased from 153.1 +/- 10.0 systolic and 84.9 +/- 12.0 mmHg diastolic (average +/- standard deviation) at baseline to 124.2 +/- 9.7 and 74.7 +/- 0.6 mmHg ($P<0.001$) at the end of 9 months. Pharmacist recommendations for alterations of drug therapy were effective at reducing blood pressure and improving blood pressure control rates.⁶

Cancer Care: Multiple studies demonstrate that pharmacist-led patient monitoring programs and telephone follow-up programs have been shown to avoid cancer treatment delays and dose reductions due to minimizing adverse effects and increasing patient drug adherence (especially with oral anticancer therapies). Holle et al. demonstrated that the addition of an oncology pharmacist-led outpatient chemotherapy monitoring program (providing education, completing medication management, monitoring for adherence and toxicity, making recommendations for toxicity, and supportive care issues) led to identification of medication related problems in 25% of the 315 assessments made (adverse events 40%, inappropriate therapy 20%, noncompliance 18%).⁷ The benefit of a pharmacist in managing oral outpatient chemotherapy as part of a multidisciplinary team was also demonstrated by Lam et al. The pharmacist improved oral chemotherapy adherence in 56 patients with hematological malignancy, performing 10.1 interventions per patient (567 total) over 3432 pharmacist encounters (6 year period). These interventions included side effect monitoring/management ($n=95$, 16.8%), drug interaction detection ($n=109$, 19.2%), chemotherapy dose adjustment ($n=82$, 14.5%), laboratory monitoring ($n=200$, 35.3%), non-cancer related drug choice ($n=74$, 13.1%) and copay assistance ($n=7$, 1.2%).⁸

4. Reduced healthcare costs

Pharmacists working on inpatient teams have been consistently shown to save the healthcare system costs well beyond what they earn in salary. In multiple studies beginning back in 1979 and continuing with the most recent research, results consistently show that pharmacists providing direct patient care in the hospital save the health care system \$4 to \$5 for every \$1 they earn in salary. For example, a systematic review of the financial impact of pharmacist services looked at 59 studies from 1996-2000 around the world including Canada, the UK, Australia, and the US, and looked at cost-benefit analysis studies of pharmacists providing a range of clinical services such as admission drug histories. The median savings to the health care system across the studies was \$4.68 for each \$1 paid in pharmacist salary.⁹ A similar review repeated for studies published between

2001-2005 again showed a significant return-on-investment with a median savings of \$4.81 for each \$1 of pharmacist salary paid to pharmacists performing clinical services for patients.¹⁰

Adverse drug events (ADE) have a substantial cost to the health care system. A study at a university teaching hospital in Ireland recorded interventions by team-based hospital pharmacists over a one year period, each assigned a rating score to determine the probability that an ADE would have occurred in the absence of an intervention. The total cost avoidance was €709,221, the input costs (calculated from the average time to make an intervention and the hourly cost of employing a pharmacist) was €81,942, resulting in a net cost benefit to the health system of €626,279 (a cost-benefit ratio of 8.64 to 1). The most common type of intervention was the identification of medication omissions, followed by dose adjustments and requests to review therapies.¹¹

The trials included in these broad-reaching systematic reviews show a consistent, positive, and very significant financial return on investing in having pharmacists work directly with patients in team-based care. Areas of cost savings across all studies included a broad range of positively impacted financial outcomes, such as overall drug cost both within the hospital and upon discharge, hospital readmission rates, emergency department visit rates, and adherence to guideline-driven medication therapy for chronic diseases, among many others. Expanding the number of hospitalized patients who are cared for by a team-based pharmacist would pay for itself multiple times over with this magnitude of cost-benefit savings.

5. Other provinces have already integrated pharmacists into community care and primary care health teams

In 2018, British Columbia was reimagining their health care system. One of their goals was to fully utilize the expertise of health professionals, and establish patient centered, team-based care that addressed under-met needs. In June of 2018, they announced that 50 new clinical pharmacists were added to primary-care network teams around the province of British Columbia as part of the province's new primary health care strategy. These pharmacists will work directly with patients with complex conditions, to reduce and manage medication-related problems such as drug interactions, adverse medication side effects, duplicate medications, and help eliminate unneeded medications. These positions are being put into place this year. ([News release 2018](#)) ([News release 2021](#))

The College of Family Physicians of Canada and the Canadian Pharmacists Association released a joint report highlighting [cases of innovation in practice](#) where pharmacists were integrated onto interdisciplinary teams in provinces across Canada. The impressive gains achieved through collaboration included:

- Integration of a pharmacist into a family health centre in Alberta led to an increase in the number of patients served as well as better patient engagement in the self-management of medication regimens due to the clinic's enhanced capacity for education and assistance.
- Integration of multiple pharmacists into a primary care network in Alberta led to measurable improvements in patient care and in patient and provider satisfaction; 90 percent of patients rated integrated pharmacist care in this case as "excellent."

- Placing a pharmacist at a family practice in British Columbia enhanced patient knowledge of complex medication plans and reduced time and energy demands on the lead family physicians.
- Establishing home-based medication assessments in a family practice in British Columbia reduced emergency room visits by frail older adults
- Introducing a team-based focus on opioid harm reduction at a community health centre in Newfoundland and Labrador has fostered reductions in the doses of opioids and number of new opioid prescriptions.
- Recruiting a pharmacist to a family health team in Ontario allowed for physician-pharmacist collaboration that led to a decrease in inappropriate medication use among older adults with cognitive impairment.

The Ontario Pharmacists Association has a [comprehensive toolkit for the integration of family health team pharmacists and their professional services into practice](#), including the role of that pharmacist and clinical evidence to support the provision of these services.

As the Health Accord makes plans to create more community care teams, pharmacists should be included on those teams.

6. Significant gaps exist in the integration of pharmacists into hospital team-based care in NL

The clinical areas in which pharmacists are members of the interdisciplinary team providing proactive care to patients vary greatly across hospitals in Newfoundland and Labrador. Overall the proportion of hospitalized patients cared for by a team that includes a pharmacist is low, estimated to range from 0 - 53% depending on the hospital.

The following is a snapshot of the current provision of clinical pharmacist services within hospitals in our province:

| Hospital*†‡ | Number of acute care beds receiving care from a team-based pharmacist | Percentage of acute care beds receiving care from a team-based pharmacist¶ | Outpatient areas with some pharmacist clinical coverage§ |
|--|---|--|--|
| Eastern Health | | | |
| Burin Peninsula Health Care Centre, Burin | 22 Medicine | 22/41 inpatient 53% | Oncology (part time) Dialysis (part time) |
| Dr. G.B Cross Memorial Hospital, Clarenville | 28 Medicine (part time) (however consistent coverage is 0 beds) | ___/41 inpatient Percentage not calculated, see footnote 1 | Oncology (part time) Dialysis (part time) |
| Carbonear General Hospital, Carbonear | None | 0/72 inpatient 0% | Oncology (part time) Dialysis (part time) Addictions (part time) |

| | | | |
|--|--|--|--|
| Janeway Children's Hospital, St. John's | 4 Pediatric ICU (ad hoc) Not a dedicated position and clinical coverage is supplied only when available after needs of dispensary are met | 4/79 inpatient 5% | None |
| Dr. Leonard A. Miller Centre, St. John's | 24 - 2 South 20 - 2 North 24 - 3 South | 68/ 128 53% | None |
| St. Clare's Mercy Hospital, St. John's | 12 - ICU 20 - Vascular Surgery 20 - Medicine | 52/205 25% | None |
| Health Sciences Centre, St. John's | 13 - ICU 8 - CVICU 20 - Hematology 42 - Surgery (out of 84 Surgery beds) 22 - Medicine (out of 86 Medicine beds) Infectious disease (consult) | 105/346 30% | Cancer Clinic (medical, hematology oncology) Thrombosis clinic Dialysis (Health Sciences and Kidney care centre) Community IV Program |
| Waterford Hospital, St. John's | 21 (East 3A adult acute care) 21 (West 3A adult acute care) 24 (North 2A geriatric psychiatry) | 66/159 41.5% | Harm Reduction Clinic (covered by Bell Island opioid agonist maintenance treatment pharmacist) |
| Central Health | | | |
| James Paton Memorial Hospital, Gander | 32 Critical Care/Medicine (however consistent coverage is 0 beds) | ___/85 Percentage not calculated, see footnote 1 | Oncology Nephrology |
| Central Newfoundland Regional Health Centre, Grand Falls-Windsor | 20 Mental Health 9 Critical Care 36 Medicine (however consistent coverage is 0 beds) | ___/117 Percentage not calculated, see footnote 1 | Oncology Nephrology |
| Western Health | | | |
| Western Memorial Regional Hospital, Corner Brook | 8 ICU/antimicrobial stewardship 16 Medicine | 24/217 11% | Oncology Long-term care (consult service) |

| | | | |
|---|---|---|----------------------|
| Sir Thomas Roddick Hospital, Stephenville | 44 (part time) (however consistent coverage is 0 beds) | ___/44 Percentage not calculated, see footnote 1 | Dialysis Oncology |
| Dr. Charles L. Legrow Health Centre, Channel-Port Aux Basques | 14 (part time) (however consistent coverage is 0 beds) | ___/44 Percentage not calculated, see footnote 1 | Oncology |
| Labrador-Grenfell Health | | | |
| Dr. Charles. S. Curtis Memorial Hospital, St. Anthony | None | 0/50 0% | None |
| Labrador West Health Centre, Labrador City | None | 0/27 0% | None |
| Labrador Health Centre, Happy Valley-Goose Bay | None | 0/25 0% | None |

*Only hospitals with a pharmacy department are included. There are a large number of community hospitals without a pharmacy department or clinical pharmacist services. These include: Dr. Walter Templeman Health Centre - Bell Island, US Memorial Health Centre - St. Lawrence, Dr. A.A Wilkinson Health Centre - Old Perlican, Placentia Health Centre, Dr. Wm. Newhook Health Centre - Whitbourne, Bonavista Health Centre, Grand Bank Community Health Centre, AM Guy Memorial Health Centre - Buchans, Brookfield Bonnews Health Care Centre - Badgers Quay, Fogo Island Health Centre, Notre Dame Bay Memorial Health Centre - Twillingate, Connaigre Peninsula Health Centre - Hr. Breton, Baie Verte Peninsula Health Centre, Green Bay Health Centre - Springdale, Dr. Hugh Twomey Health Centre - Botwood, Calder Health Centre - Burgeo, Bonne Bay Health Centre - Norris Point, Rufus Guincharde Health Centre - Port Saunders, White Bay Central Health Centre - Roddickton, Strait of Bell Isle Health Centre - Flowers Cove, Labrador South Health Centre - Forteau

† Long Term Care facilities have been excluded.

‡ This summary does not include pharmacists affiliated with Memorial University School of Pharmacy working in family practice and outpatient clinic settings

|| Number of beds consistently covered by pharmacists on clinical teams was estimated through correspondence with the regional health authority pharmacy directors and estimates from the clinical pharmacists working in those areas

¶ Total number of beds per facility from Health and Community Services - Facility Bed Profile 2014 - 2015
https://www.nlma.nl.ca/FileManager/NLMA-Consultation-on-Safe--Sustainable-Health-Care-/docs/Provincial_Bed_Numbers_by_Facility_Teledata_Period_13_Nov_2015.pdf

§ Number of patients serviced for outpatient areas is unable to be estimated

Footnote 1: In many cases, the number of beds serviced by pharmacists on teams compared to the total number of beds in the hospital does not tell the whole story. Regional hospitals outside of the St. John's metro region are often challenged to maintain consistency of team-based pharmacist services due to smaller staff. Clinical pharmacists often must be pulled from their teams to dispense medications on a scheduled or as needed basis. One hospital described having "medicine coverage" but in reality, a pharmacist is only able to cover those beds and perform proactive team-based activities 1 - 2 days a week. In others, when it is the pharmacist's turn to cover the pharmacy dispensary, their team goes uncovered by a pharmacist for 3 weeks out of a 6 week cycle.

As you can see in the table above, while many sites are doing their best to help patients in between covering pharmacy dispensary duties, only about 20% of hospitalized patients (341 out of 1594 acute care beds) receive dedicated care provided by a team-based pharmacist. Our current provision of team-based pharmacist care is significantly lower than other hospitals across the country. According to CSHP's Hospital Pharmacy survey report from 2016/2017 (see following figures), over half of hospitals surveyed from across Canada (53% or 97 hospitals) reported having clinical pharmacist services in 50 - 99% of care areas. Almost half of hospitals (47% or 86 hospitals) had pharmacists who were involved in developing patient care plans in 50 - 99% of areas and 8% or 15 hospitals had pharmacists involved in developing patient care plans for 100% of patient care areas.

| Hospital Pharmacy in Canada Report 2016/17 | | B - Clinical Pharmacy Practice | | | | | | | | | | |
|--|-----------|--------------------------------|-----------|-----------|---------------|--------------|------------|-----------|-----------|-----------|-----------|-----------|
| <i>Table B-4 continued</i> | | | | | | | | | | | | |
| Clinical Pharmacy Activities | All | Bed Size | | | Hospital Type | | | Region | | | | |
| | | 50-200 | 201-500 | >500 | Teaching | Non-teaching | Pediatrics | BC/YT | Prai | ON | QC | Atl |
| Exists in most areas (50-99%) | 97 53% | 26 52% | 46 57% | 25 47% | 30 73% | 60 44% | 7 | 11 37% | 26 68% | 31 60% | 19 44% | 10 48% |
| Exists in some areas (1-49%) | 69 38% | 20 40% | 27 33% | 22 42% | 6 15% | 63 46% | 0 | 15 50% | 9 24% | 16 31% | 20 47% | 9 43% |
| Does not exist (0%) | 7 4% | 3 6% | 3 4% | 1 2% | 0 0% | 7 5% | 0 | 0 0% | 2 5% | 0 0% | 3 7% | 2 10% |

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| Pharmacists are involved in developing patient care plans | (n=) | (184) | (50) | (81) | (53) | (41) | (136) | (7) | (30) | (38) | (52) | (43) | (21) |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-------|-----------|-----------|-----------|-----------|-----------|------|
| Exists in all areas (100%) | 15 8% | 3 6% | 6 7% | 6 11% | 8 20% | 6 4% | 1 | 3 10% | 2 5% | 8 15% | 2 5% | 0 0% | |
| Exists in most areas (50-99%) | 86 47% | 20 40% | 45 56% | 21 40% | 26 63% | 54 40% | 6 | 14 47% | 26 68% | 26 50% | 13 30% | 7 33% | |
| Exists in some areas (1-49%) | 74 40% | 22 44% | 26 32% | 26 49% | 7 17% | 67 49% | 0 | 12 40% | 7 18% | 17 33% | 26 60% | 12 57% | |
| Does not exist (0%) | 9 5% | 5 10% | 4 5% | 0 0% | 0 0% | 9 7% | 0 | 1 3% | 3 8% | 1 2% | 2 5% | 2 10% | |

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Our hospitals that currently have 0% of inpatients receiving care from a team-based pharmacist are among only 4% of hospitals nationally.¹²

As per previous sections of this submission, there is robust evidence supporting the benefit of including pharmacists onto interdisciplinary teams within internal medicine, oncology, and geriatrics, among many others. As well, there is compelling rationale to incorporate pharmacists onto teams caring for those patient populations experiencing poor outcomes in our province as outlined in the Health Accord's interim report, such as cardiology and stroke. Most regional health authorities (RHAs) do not report having pharmacists on interdisciplinary teams in areas such as neurology or cardiology. While each hospital and RHA may have different priorities and needs, it is clear that all hospitals within Newfoundland and Labrador can do better in increasing the proportion of hospitalized patients receiving team-based care from a pharmacist.

7. Pharmacists can improve medication use in Newfoundland and Labrador's aging population through integration onto long-term care interdisciplinary teams

The evidence shows integration of pharmacists on long-term care based teams can help facilitate deprescribing, improve patient outcomes, and decrease risk of potential harm to residents.

Polypharmacy, when an individual takes multiple medications, is a known contributor to medication-related harm.¹³ In Canada, older adults living in long-term care (LTC) homes experience polypharmacy at higher rates than their community-living counterparts. Based on 2016 data from the Canadian Institute for Health Information, those living in LTC establishments receive an average of 10 medications daily compared to seven medications daily for those living in community.¹⁴ Strategies to reduce polypharmacy are urgently needed. Integration of deprescribing (the planned and supervised process of dose reduction or stopping of medication that might be causing harm, or no longer be of benefit) into care processes in LTC homes aims to reduce the risks associated with polypharmacy to improve each person's quality of life.

The Newfoundland and Labrador Pharmacy Board Standards of Practice for the Provision of Pharmaceutical Care to Long Term Care Facilities that came into effect July 1, 2021 states a pharmacist must conduct a comprehensive medication review for each resident within 90 days of admission, wherever possible, and at least annually, thereafter. Once completed, the results of the medication review, including any recommendations shall be communicated to the resident's primary care provider.¹⁵

A 2019 systematic review and meta-analysis of 52 studies found pharmacists contribute substantially to patient care in nursing homes, ensuring quality use of medication, resulting in reduced mean number of falls (-0.50; 95% confidence interval: -0.79 to -0.21).¹⁶

Zermansky et al. completed a randomized controlled trial in the UK to measure the impact of pharmacist-conducted medication reviews with elderly care home residents. A total of 661 residents aged 65 or over taking one or more medications were included in the study. The intervention group received a clinical medication review by a pharmacist using patient and clinical records, who then submitted recommendations to general practitioners (GP) for approval and implementation. Control patients received usual GP care. The pharmacist reviewed 315/331 (95.2%) patients in 6 months. A total of 62/330 (18.8%) control patients were reviewed by their GP. The mean number of drug changes per patient were 3.1 for intervention and 2.4 for control group ($P < 0.0001$). There were respectively 0.8 and 1.3 falls per patient ($P < 0.0001$). Their findings showed a clinical pharmacist can review a resident's medications more frequently than a GP and make recommendations that are usually accepted. This leads to substantial change in patients' medication regimens and improves patient outcomes by reducing falls.¹⁷

Gheewala et al. completed a retrospective analysis in Australia to determine the prevalence of chronic kidney disease (CKD) and estimate the magnitude of inappropriate prescribing of renally cleared medications in residents of aged care facilities. Over 98% of 911 residents of aged care facilities studied had at least one drug-related problem (DRP). Most recommendations (83.8%) made by pharmacists to resolve DRPs were accepted by general practitioners. CKD was prevalent in 48% of residents, and inappropriate prescribing of renally dosed medications was identified in 28 residents (16%) with CKD. Their findings showed pharmacist-completed medication reviews significantly reduced drug-related problems encountered among residents especially among individuals with chronic kidney disease.¹⁸

8. Pharmacists can improve medication use in Newfoundland and Labrador's aging population through integration onto geriatric interdisciplinary teams within acute care and rehabilitation settings

The evidence shows integration of pharmacists on acute care teams caring for geriatric patients promotes cost savings, as well as decreases inappropriate drug prescribing, and helps facilitate deprescribing.

The Beers Criteria for Potentially Inappropriate Medication Use in Older Adults, commonly called the Beers List, are guidelines for healthcare professionals to help improve the safety of prescribing medications for older adults. Drugs listed on the Beers List are categorized according to risks for negative outcomes. Based on 2016 data from the Canadian Institute for Health Information, 66% of Newfoundlanders and Labradorians who are older than 65 years are taking at least one medication on this list.¹⁴

One drug class identified in the Beers List as contributing to negative outcomes are medications with anticholinergic effects. McLarin et al. completed a retrospective analysis to investigate the impact of pharmacist-led medication reviews on anticholinergic burden quantified by seven anticholinergic risk scales. Anticholinergic burden scores were significantly lower after pharmacists' recommendations as determined by each of the seven scales. The reduction in anticholinergic burden was also significant after physicians' acceptance of the pharmacists' recommendations according to all scales with the exception of one scale which reached borderline significance.¹⁹

Gillespie et al. studied the impact of a team-based hospital pharmacist caring for internal medicine patients aged 80 or older in Sweden. The patients (n=368) were randomized to receive team-based care with or without a clinical pharmacist. In the intervention group, the 12-month readmission rate was reduced by 12%, there was a 47% reduction in emergency department visits, and an 80% reduction in drug-related readmissions. These results were all statistically significant. After accounting for the cost of paying the pharmacist, the savings in the intervention group was \$230 per patient.²⁰

The IMPACC Study out of Montreal compared the impact of a pharmacist's presence on the detection of drug-related problems (DRP) in an interdisciplinary geriatric ambulatory clinic, against a control group without a pharmacist. Their findings showed the inclusion of a pharmacist on the team was associated with having a positive impact on care by substantially increasing the number of DRPs detected in older patients. Overall, 636 DRPs were detected in the study population. In the adjusted analysis, the difference between the two groups was 2.7 DRP detected favouring the group with a pharmacist (95% confidence interval 2.0-3.3).²¹

Campbell et al. aimed to quantify the impact of pharmacist interventions on the care of older adults in a retrospective chart review analysis. A total of 3100 drug therapy problems were identified during 3309 patient-pharmacist encounters for 452 patients in a geriatric practice. Pharmacists provided 4921 interventions, often more than 1 intervention per drug therapy problem, for 275 different medications. Laboratory monitoring and dose change were the most common interventions, with an estimated annual financial savings between \$268,690 and \$270,591.²²

Investigators of the MAGIC-PHARM Study investigated the impact of the removal of a clinical pharmacist from an acute geriatric ward on patients' Medication Appropriateness Index (MAI) scores, admission-related outcomes, and medication burdens. Their findings showed the removal of the pharmacist from the team led to an increase in inappropriate drug prescribing. The intervention

had a significant impact on the primary outcome, increasing the relative differential MAI score by 9.3 points (95% confidence interval 3.9-14.6).²³

9. Pharmacists can effectively aid Newfoundland and Labrador's aging population seamlessly transition between levels of care

The evidence shows pharmacists can deliver substantial cost savings to the healthcare system, reduce medication-related errors, and improve patient outcomes when involved in the care of older patients transitioning between different levels of care.

Older adults have multiple comorbid conditions and use multiple medications. Because of this they are more likely to experience complicated transitions between acute and long-term care or community settings. Therefore, it is important to develop effective interventions to protect older adults at transition points of care.

A 2016 systematic review and meta-analysis by Mekonnen et al. studied the effect of pharmacist-led medication reconciliation programs on clinical outcomes at hospital transitions. 17 studies involving 21,342 patients were included. The pooled relative risks showed statistically significant reductions of 67% for adverse drug event-related hospital revisits, 28% reduction in emergency department visits, and 19% reduction in hospital readmissions in the intervention group compared with the usual care group. The authors concluded that the review supports pharmacist-led medication reconciliation programs.²⁴

In 2020 O'Donnell et al. in Ontario completed a retrospective cost analysis to evaluate the impact of a well-established, pharmacist-driven medication reconciliation program. Their analysis showed pharmacist-led medication reconciliation programs deliver substantial healthcare savings. From a pool of 6,678 pharmacist recommendations, a limited sample of recommendations targeting specific medication-related adverse events showed potential savings of \$622.35 per patient from hospital admissions avoided and of \$1,414.52 per patient per year from medication deprescribing.²⁵

Crotty et al. completed a randomized, single-blind controlled trial to assess the impact of adding a pharmacist transition coordinator on evidence-based medication management and health outcomes in older adults undergoing first-time transfer from a hospital to a long-term care facility. The intervention included medication-management transfer summaries from hospitals, timely coordinated medication reviews by pharmacists, and case conferences with physicians and pharmacists. The primary outcome was the quality of prescribing, measured using the Medication Appropriateness Index (MAI). At follow-up, there was no change in MAI from baseline in the intervention group, whereas it had worsened in the control group. Also, patients who received the intervention and were alive at follow-up exhibited a significant protective effect of the intervention against worsening pain and hospital usage.²⁶

Issue #2: The Health Accord NL envisions improving health system performance by enabling providers to work to their full scope of practice. Neither hospital pharmacists nor regulated pharmacy technicians in hospitals in Newfoundland and Labrador are currently working to their full scope of practice, to the detriment of patient care.

Recommendation #2: Expanded scope of pharmacist practice to include collaborative or independent prescribing will maximize the benefit pharmacists provide during provision of patient care. Utilization of pharmacy technicians working to full scope, for example for mixing/technical preparation of medication, completing drug access/special authorization paperwork and the collection of best possible medication histories, will enable pharmacists in hospitals to be integrated onto more interdisciplinary care teams.

1. Expanding the scope of practice of our hospital pharmacists

Current scope of practice

The skills and knowledge of pharmacists, and the activities permissible under the current scope of practice of pharmacists in Newfoundland and Labrador, are being underutilized in hospital practice sites due to clinical pharmacists being on only a limited number of interdisciplinary care teams.

In this province, pharmacists are allowed to initiate therapy for minor ailments/conditions, for smoking/tobacco cessation, and to prescribe in an emergency. They may adapt or manage a prescription by making a therapeutic substitution, changing the drug dose, formulation, or regimen, and can renew/extend a prescription for continuity of care. Pharmacists may administer any drug or vaccine.²⁷ Pharmacists working on interprofessional teams apply their scope of practice to manage medication therapy to the benefit of their care team and patients.

Pharmacist prescribing in hospitals as it is in place today and as described above, saves time, reduces unnecessary or redundant calls to other prescribers, and helps the pharmacist optimize medication therapy. By expanding the proportion of hospitalized patients cared for by team-based pharmacists, these benefits could be more widely leveraged. Several examples of how pharmacist prescribing is currently used in hospital team-based care are as follows:

- A patient is ordered an antibiotic for a urinary tract infection diagnosed during hospitalization, however the patient is allergic to the selected medication. The pharmacist changes the prescription to an alternative antibiotic, after reviewing the patient's allergies, renal function, and urinary culture results. (Adapting a prescription)
- In an outpatient dialysis unit, a patient asks the pharmacist for a refill of a routine medication (e.g. rabeprazole) because they have run out. The prescriber is unavailable, so the pharmacist provides the prescription. (Extending a prescription). An example of inpatient use of prescription extension would be reassessment and reordering of enoxaparin

for venous thromboembolism prophylaxis. Note, a prescription may only be extended by a pharmacist one time.

- After completing the best possible medication history and medication reconciliation on admission (including patient or caregiver interview), the pharmacist orders medications that were missed on the admission orders (Providing an interim supply) and discontinues medications that the patient has no longer been taking at home, which helps to prevent inadvertent medication withdrawal or toxicity. The pharmacist is responsible to be reasonably certain that the omission/inclusion of stopped medications was not intentional and if in doubt, contacts the original prescriber.
- A patient has an elevated serum creatinine on admission. The pharmacist adjusts the dose of the patient's medications for their reduced renal function. The pharmacist is responsible for being aware of all required information to make this decision (i.e. is this kidney disease acute or chronic, is the patient on dialysis, is aware of the indication, and other relevant clinical factors)

Under this practice, pharmacists are required to perform a complete assessment appropriate to the circumstances using a combination of patient interview, review of the patient's electronic health record, and other sources as appropriate. They are required to document their prescribing according to local approved processes, and to communicate within the circle of care as per professional judgement. For example: the hematology team, consisting of a hematologist, general oncology practitioner and pharmacist meet at the end of the day. As they go through the patient issues list, the pharmacist updates them, letting them know that she started a laxative for a patient with constipation, adjusted the dose of piperacillin-tazobactam for a patient with decreased renal function, and held blood pressure medications for a patient starting rituximab, as is the team's normal practice.

Expanded scope of practice is an opportunity to further increase the impact of hospital pharmacists:

The scope of practice of pharmacists is expanding in countries around the world, and pharmacists can now prescribe independently in the United Kingdom, in several American states, and in Alberta, among others. Pharmacists in this province have the most restrictive legislated scope of practice in Atlantic Canada, and lag well behind the broad scope of practice in place in Alberta (see graphic below).

Urgent change is needed to the Pharmacy Act in order to bring our scope of practice up to par with our national and international counterparts. Suggested changes involve pharmacists with the ability to prescribe independently or at least in collaborative settings, to fully manage and take responsibility for medication therapy, rather than simply being able to "tweak" or extend prescriptions of others. The ability to order and interpret laboratory tests would ensure pharmacists can utilize their broad medication expertise to use targeted and appropriate laboratory monitoring to ensure safety and efficacy of drug therapy. These suggested changes to legislation to allow expanded scope of practice will have a significant impact on pharmacists' ability to manage patient care, save costs, and contribute to improved patient outcomes in both hospital and community settings.

If hospital pharmacists in Newfoundland and Labrador had full independent prescribing authority, it could be utilized in team-based care as demonstrated in the following examples:

- Regional health authority pharmacists could expand Memorial University's Medication Therapy Services (MTS) clinic to all regions. The MTS clinic is a referral-based pharmacist-led outpatient clinic to manage, adjust, and titrate medications based on response, adverse effects, and the therapeutic goals set by the team or physician. For example, a diabetic patient whose medications are being adjusted to achieve target glycemic control, or a stroke patient referred for management of cardiovascular risk factors such as hypertension treatment and smoking cessation.
- Hospital pharmacists can also contribute to quality patient care in other outpatient settings for example by titrating and optimizing anemia and bone and mineral disorder treatments for dialysis patients, working collaboratively in community based teams, and in outpatient clinics caring for patients with chronic diseases or complex medication needs.
- Team-based pharmacists contribute to antimicrobial stewardship, and can carry out the patient's antimicrobial treatment plan set by the team. For example when a patient is admitted and started on IV antibiotics, the pharmacist can narrow therapy once culture and sensitivity results are available, step-down to oral options once the patient is clinically improving, and choose short course durations for patients who respond well to treatment. They can also contribute to opioid stewardship by prescribing to optimize non-opioid pain management during admission.
- Team-based pharmacists decrease inappropriate medication use at discharge by helping to taper and discontinue medications started in hospital. Examples include proton pump inhibitors started in ICU for stress-ulcer prophylaxis, and sedatives/antipsychotics started for patients who are delirious or agitated during their initial presentation of acute illness.
- Hospitalization is an opportunity for team-based pharmacists to do a thorough medication review and assessment, and deprescribe unnecessary medications, or simplify home medication regimes, for example by slowly tapering and discontinuing benzodiazepines and other inappropriate medications in the frail elderly patient at risk for falls.
- When patients present to hospital with an acute illness, many home medications are held or reduced during the early stages of hospitalization. A team-based pharmacist could restart, adjust and up-titrate home medications to ensure their hospitalization does not negatively impact their guideline-driven chronic disease management. One example of this would be a patient on quadruple therapy for heart failure with reduced ejection fraction (treatment with beta-blocker, ACE inhibitor, SGLT2 inhibitor, and spironolactone).
- Particularly in rural areas where physician coverage is difficult to access, pharmacists could manage patients during their oncology treatments to address chemotherapy-related toxicity, adjust antihypertensives and insulin/oral hypoglycemics as the patient progresses through chemotherapy treatments, and respond to other medication needs of the patient.
- On community care teams, a pharmacist could collaborate with team members and patients to identify and resolve actual and potential drug therapy problems through delivery of comprehensive medication management and optimize drug therapy outcomes for the patient. For example, an elderly patient has a recent fall and the team is unsure of his ability to manage his own medications as he lives alone. The pharmacist meets with the patient, reviews his medications, and identifies potential medications that may be contributing to his

recent fall, as well as identifies that he may not be taking his medications as prescribed. The pharmacist implements a plan to safely deprescribe the culprit medication and liaises with the community pharmacy to implement blister packaging to improve his adherence.

| PHARMACISTS' SCOPE OF PRACTICE IN CANADA | | BC | AB | SK | MB | ON | QC | NB | NS | PEI | NL | YT | NWT | NU |
|--|---|----|----|----|----|----|----|----|----|-----|----|----|-----|----|
| | | | | | | | | | | | | | | |
| Prescriptive Authority (Schedule 1 Drugs) ¹ | Independently, for any Schedule 1 drug | X | | X | X | X | X | X | X | X | X | X | X | X |
| | In a collaborative practice setting/agreement | X | | | | X | X | | | X | X | X | X | X |
| | Initiate ² | X | | | | | | | | | | | X | X |
| | For minor ailments/conditions | X | | | | | | | | | | | X | X |
| | For smoking/tobacco cessation | X | | | | | | | | | | | X | X |
| | In an emergency | | | | | | | | | | | | X | X |
| Adapt ³ /Manage | Independently, for any Schedule 1 drug ⁴ | X | | X | X | X | X | X | X | X | X | X | X | X |
| | Independently, in a collaborative practice ⁴ | X | | | | X | X | | | X | X | X | X | X |
| | Make therapeutic substitution | | | | X | X | | | | | | | X | X |
| | Change drug dosage, formulation, regimen, etc. | | | | | | | | | | | | X | X |
| | Renew/extend prescription for continuity of care | | | | | | | | | | | | | X |
| Injection Authority (SC or IM) ⁵ | Any drug or vaccine | | | | | X | | | | | | | X | X |
| | Vaccines ⁶ | | | | | | | | | | | | X | X |
| | Influenza vaccine | | | | | | | | | | | | X | X |
| Labs | Order and interpret lab tests | X | | | | X | | | | | X | X | X | X |
| Techs | Regulated pharmacy technicians | | | | | | X | | | | | X | X | X |

1. Scope of activities, regulations, training requirements and/or limitations differ between jurisdictions. Please refer to the pharmacy regulatory authorities for details.
2. Initiate new prescription drug therapy, not including drugs covered under the Controlled Drugs and Substances Act.
3. Alter another prescriber's original/existing/current prescription for drug therapy.
4. Pharmacists independently manage Schedule 1 drug therapy under their own authority, unrestricted by existing/initial prescription(s), drug type, condition, etc.
5. Applies only to pharmacists with additional training, certification and/or authorisation through their regulatory authority.
6. Authority to inject may not be inclusive of all vaccines in this category. Please refer to the jurisdictional regulations.
7. Applies only to existing prescriptions, i.e., to provide continuity of care.
8. Pursuant to a Ministerial Order during a public health emergency.
9. Applies only to pharmacists working under collaborative practice agreements.
10. Only in the case of a drug shortage.
11. For education/demonstration purposes only.
12. Pending health system regulations for pharmacist requisitions to labs.
13. Authority is limited to ordering lab tests.
14. Authority limited to ordering blood tests. No authority to interpret tests.
15. Pharmacy technician registration available through the regulatory authority (no official licensing).

Revised January 2021

Canadian Pharmacists Association / Association des pharmaciens du Canada

2. Optimization of regulated pharmacy technician scope of practice

Newfoundland and Labrador hospital pharmacies include both pharmacists and regulated pharmacy technicians. As of CSHP's 2016/2017 hospital pharmacy survey, 9 of Canada's 10 provinces (Newfoundland and Labrador included) had legislation in place protecting the title of Pharmacy Technician and designating pharmacy technicians as regulated health professionals, a relatively recent change in Canada. The Pharmacy Examining Board of Canada (PEBC) is the national certification body for pharmacists and pharmacy technicians. All Canadian pharmacy technicians currently practicing in the profession have passed the PEBC Pharmacy Technician Evaluating Examination and Qualifying Examination to become a regulated pharmacy technician.¹²

Most of the available literature on the roles of pharmacy technicians has focused on medication distribution activities. However, since becoming regulated within the past few years, the scope of practice of technicians has greatly increased to include more independent work, expanded capabilities for technicians checking each other's work, administrative support of patient care activities, management of investigational drug use, drug access paperwork such as special authorization requests, and collection of the Best Possible Medication History (BPMH) from patients to support medication reconciliation. Nationally, obtaining the BPMH is the most common role of the pharmacy technician in the emergency department, occurring at 87% of sites that responded to

a national survey.²⁸ Studies in the emergency department, dialysis clinics, and pre-operative settings have found pharmacy technicians to be able to complete BPMH as effectively as pharmacists.^{29,30,31} Expansion of the role of pharmacy technicians to incorporate obtaining BPMHs and providing other clinical support activities in the emergency department and other patient care areas would enable pharmacists to provide team-based care to a greater proportion of hospitalized patients.

Notably, pharmacy technicians are currently only performing BPMH in two hospitals in Newfoundland and Labrador. Within the Central Health Regional Health Authority, regulated pharmacy technicians (1 FTE per site) are being utilized within the emergency department performing BPMH 8am - 4pm Monday to Friday. They have been recently approved to expand this service to cover weekends (Saturday and Sundays 8am - 4pm) to start in September 2021. Central Health will also be expanding BPMH collection to rural emergency departments via virtual BPMH collection, to be implemented December 2021. No other emergency department sites within this province are utilizing technician-collected BPMH at this time.

Pharmacy technicians are essential in the medication distribution process and their role is expanding. They can perform medication order entry, packaging of unit dose items, preparing patient-specific and batch IV admixtures/parenteral nutrition, preparation of chemotherapy and extemporaneous compounds, and replenishing of automated dispensing cabinets. A recent study conducted in an inpatient dispensary of a major Australian hospital showed that the overall accuracy of checking medication orders was greater when pharmacy technicians performed this task than when pharmacists did so, a result that validates the expanded technician scope of practice.³²

Pharmacists in Newfoundland and Labrador hospitals continue to spend a high proportion of time completing tasks that are within the scope of regulated pharmacy technicians, for example supervising the mixing/technical preparation of medication, completing drug access/special authorization paperwork, troubleshooting medication distribution questions and problems, prescription order entry, and the collection of best possible medication history. By expanding the staffing and facilitating regulated pharmacy technicians to work more fully to scope, existing pharmacist time can be freed up to provide direct patient care on teams within hospitals, which brings cost savings and improved patient outcomes overall. This is also much less costly than hiring more pharmacists.

Issue #3: Medication reconciliation is an important safety and quality step in the transitions of patients throughout the healthcare system. Medication reconciliation in our hospitals is currently a nursing responsibility, despite extensive evidence that shows improved patient outcomes associated with pharmacy-led medication reconciliation.

Recommendation #3: In order to improve medication safety and patient outcomes, pharmacy staff should perform medication reconciliation for a larger proportion of hospitalized patients. This can be achieved by implementing pharmacy technician-collected Best Possible Medication Histories in emergency departments, and by integrating more clinical pharmacists onto interdisciplinary teams.

1. Better seamless care: pharmacy-led medication reconciliation at transitions of care reduces errors and improves patient outcomes

The role of the pharmacist on hospital inpatient teams is multifaceted. A “core” set of clinical pharmacist services, including team rounds participation, admission drug histories, adverse reaction management, provision of drug information, and drug protocol management have been associated with improving patient outcomes as described above. In addition to these core activities, team-based pharmacists perform high quality medication reconciliation at all transitions of care that is essential to patient safety.

The Best Possible Medication History (BPMH) is a history created using 1) a systematic process of interviewing the patient/family; and 2) a review of at least one other reliable source of information to obtain and verify all of a patient’s medication use (prescribed and non-prescribed). The BPMH is more comprehensive than a routine primary medication history, which is often a quick preliminary medication history and which may not utilize multiple sources of information.³³

Medication reconciliation is a formal process that ensures accurate and comprehensive medication information is communicated consistently across transitions of care. Medication reconciliation requires a systematic and comprehensive review of all the medications a patient is taking to ensure that medications being added, changed or discontinued are carefully evaluated. It is a component of medication management and will inform and enable prescribers to make the most appropriate prescribing decisions for the patient.³³

Medication Reconciliation (MedRec) is a Multi-Step Process

| | Admission | Transfer | Discharge |
|---------------|---|--|---|
| | Best Possible Medication History (BPMH) ↔ Admission Medication Orders (AMOs) | Best Possible Medication History (BPMH) ↔ New Transfer Orders ↔ Medication Administration Order (MAR) | Best Possible Medication History (BPMH) ↔ Discharge Orders ↔ Medication Administration Order (MAR) |
| How To | Proactive Process <ol style="list-style-type: none"> 1. Create the BPMH using (1) a systematic process of interviewing the patient, family/caregiver and (2) a review of at least one other reliable source of information. 2. Create AMOs by assessing each medication in the BPMH. 3. Compare the BPMH against the AMOs ensuring all medications have been assessed; identifying and resolving all discrepancies with the most responsible prescriber. Retroactive Process <ol style="list-style-type: none"> 1. Create a primary medication history (PMH). 2. Generate the AMOs from the PMH. 3. Create the BPMH using (1) a systematic process of interviewing the patient, family/caregiver and (2) a review of at least one other reliable source of information. 4. Compare the BPMH against the AMOs ensuring all medications have been assessed; identifying and resolving discrepancies with the most responsible prescriber. | <ol style="list-style-type: none"> 1. Compare the admission BPMH with the transfer orders and the existing transferring unit's MAR ensuring all medications have been assessed; 2. Identify and resolve all discrepancies with the prescriber 3. Document and communicate any resulting changes to the medication orders. | <ol style="list-style-type: none"> 1. Create the BPMDP <ul style="list-style-type: none"> • Review the last 24-hour MAR or the most up-to-date medication profile and record medications on the BPMDP that are relevant for discharge; • Compare these medications to the BPMH obtained at admission and record any medications on the BPMDP that are not included on the MAR; 2. Identify all discrepancies between the BPMH and the last 24-hour MAR or most up-to-date medication profile <ul style="list-style-type: none"> • Omitted medications, dose adjustments, non-formulary/ formulary adjustments; • Complete documentation for each medication on the BPMDP indicating: continue as prior to admission, adjusted, discontinued or new in hospital. 3. Resolve and document any discrepancies with the prescriber. <ul style="list-style-type: none"> • Prescriber reviews and completes the BPMDP; makes adjustments and writes new prescriptions as appropriate. 4. Communicate BPMDP to the patient and the next providers of care <ul style="list-style-type: none"> • Conduct a BPMDP patient/caregiver interview using a systematic process and document; • Assess patient/caregiver knowledge about medications once education provided; e.g. side effects to look out for, who to call if questions re medication, what to do if a dose is missed • Refer patient for community pharmacy medication review program follow-up where applicable; • Communicate BPMDP to the community pharmacy, primary care physician, alternative care facility, family health team, ambulatory clinics and home care as applicable. |
| Tasks | <ul style="list-style-type: none"> - Clarify any confusion about medication names, doses, frequencies, or routes on the BPMH. - Prescriber to decide which medications on the BPMH to continue, discontinue or modify. - Identify and resolve discrepancies between the BPMH and admission medication order with the prescriber. | Prescriber to decide: <ul style="list-style-type: none"> - which stopped medications on the BPMH should be restarted. - which inpatient medications to continue, discontinue or modify upon transfer. | Prescriber to decide: <ul style="list-style-type: none"> - which stopped medications on the BPMH should be restarted. - which inpatient medications to continue, discontinue or modify upon discharge. - which new medication to start upon discharge. |

Developed by ISMP Canada for Safer Healthcare Now! Adapted from: 27 Apr 2009 Electronic Medication Reconciliation: Practices for Streamlining Information Transfer. Washington, DC: Advisory Board Co; 2007.

Medication reconciliation is currently a nursing practice responsibility within hospitals in Newfoundland and Labrador, however extensive evidence exists in support of pharmacy-led medication reconciliation. Medication reconciliation performed by pharmacy staff is more complete than that performed by other providers.

According to the CSHP Hospital Pharmacy Report 2016/2017, medication reconciliation was performed by pharmacy staff in all areas of the hospital for 15 sites (8% of those surveyed). Medication reconciliation was performed by pharmacy staff in most areas of the hospital (50 - 99%) for 90 hospitals (49% of those surveyed). Currently in our province, pharmacy staff have limited involvement in medication reconciliation, as evidenced by the small number of pharmacy technicians performing Best Possible Medication Histories (BPMH) in emergency departments, and by the low percentage of hospitalized patients receiving team-based care that includes a pharmacist.

| Medication reconciliation is performed by pharmacy staff at your facility | (n=) | (184) | (50) | (81) | (53) | (41) | (136) | (7) | (30) | (38) | (52) | (43) | (21) |
|---|------|-------|------|------|------|------|-------|-----|------|------|------|------|------|
| Exists in all areas (100%) | | 15 | 4 | 9 | 2 | 6 | 8 | 1 | 1 | 0 | 10 | 2 | 2 |
| | | 8% | 8% | 11% | 4% | 15% | 6% | | 3% | 0% | 19% | 5% | 10% |
| Exists in most areas (50-99%) | | 90 | 24 | 37 | 29 | 25 | 61 | 4 | 6 | 21 | 31 | 22 | 10 |
| | | 49% | 48% | 46% | 55% | 61% | 45% | | 20% | 55% | 60% | 51% | 48% |
| Exists in some areas (1-49%) | | 66 | 13 | 31 | 22 | 10 | 54 | 2 | 16 | 14 | 10 | 18 | 8 |
| | | 36% | 26% | 38% | 42% | 24% | 40% | | 53% | 37% | 19% | 42% | 38% |
| Does not exist (0%) | | 13 | 9 | 4 | 0 | 0 | 13 | 0 | 7 | 3 | 1 | 1 | 1 |
| | | 7% | 18% | 5% | 0% | 0% | 10% | | 23% | 8% | 2% | 2% | 5% |

Carter et al. performed a study occurring over a three-month period with a clinical pharmacist assigned to the emergency department (ED) in a 475-bed tertiary care teaching facility performing medication histories for patients being admitted through the ED.³⁴ The medication histories obtained by other ED providers were compared with that of the clinical pharmacist and discrepancies documented. Of the 817 home medications documented by the other providers, 78% were incomplete and were supplemented with additional information by pharmacists. The study concluded that pharmacist-acquired medication histories taken in the emergency department were more complete than those acquired by other health care professionals.

A systematic review and meta-analysis of pharmacist-led medication reconciliation in emergency departments included eleven studies in its qualitative analysis and eight studies in its meta-analysis. Pharmacy-led medication reconciliation substantially reduced medication discrepancies in the emergency department. The most common discrepancies included omission and incorrect/omitted dose or frequency. Unlike usual care, pharmacy-led medication reconciliation significantly reduced the proportion of patients with medication discrepancies by 68% (response rate 0.32, 95% CI 0.19-0.53 $P < 0.0001$) and the number of discrepancy events by 88% (response rate 0.12, 95% CI 0.06-0.26 $P < 0.0001$). Subgroup analysis revealed no differences between pharmacists and pharmacy technicians in medication reconciliation performance.³⁵

Alex et al. found that a clinical pharmacist's involvement on the patient care team improved patient safety by decreasing discharge medication errors.³⁶ This study assigned a pharmacist to assist with medication management, medication reconciliation, and medication education upon discharge to tertiary care hospital medicine teams in a prospective non-randomized controlled trial. The percentage of patients without medication errors within 72 hours of discharge was 93.8% on the team with the pharmacist compared to 40.2% on the team without ($P < 0.0001$).

Mekonnen et al. performed a systematic review and meta-analysis of 17 studies involving 21,342 adult patients comparing the effectiveness of pharmacist-led medication reconciliation interventions to usual care across multiple transitions of care.²⁴ Pharmacist-led medication reconciliation programs substantially reduced the rate of all-cause readmissions, all-cause ED visits and adverse drug event related hospital revisits. All of these reductions were statistically significant.

In the database evaluation described previously, pharmacists performing admission drug histories was the service most strongly associated with reduced in-hospital mortality, preventing 107.78 deaths per hospital per year ($p = 0.001$).⁴

A model-based cost-effectiveness analysis of interventions aimed at preventing medication errors at hospital admission found that pharmacist-led medication reconciliation was a cost effective use of healthcare resources.³⁷

Together, this body of evidence clearly indicates that pharmacists, with the support of regulated pharmacy technicians, should be performing medication reconciliation for as many hospitalized patients as possible. This is achievable by implementing technician-collected BPMH in emergency departments in our province, and by increasing the proportion of hospitalized patients cared for by team-based pharmacists, since medication reconciliation at transitions of care is a fundamental service provided as part of team-based pharmacist care.

Issue #4: Digital technologies that have the potential to prevent errors and improve efficiency are under-utilized in hospitals and hospital pharmacies in Newfoundland and Labrador.

Recommendation #4: The quality of patient care can be improved by updating pharmacy systems and technologies within the hospitals of Newfoundland and Labrador. This in turn helps to address problems 1 through 3 by preventing errors and medication-related harm, and improving efficiency to free up pharmacist and pharmacy technician time to practice to full scope.

Digital technology is under-utilized in hospitals and hospital pharmacies in Newfoundland and Labrador, including use of bedside barcode scanning, automated dispensing cabinets, computerized or electronic medication administration records (CMAR/EMAR), computerized provider order entry (CPOE), prescription scanning, camera verification, and gravimetric verification. These technologies, described further below, all have the potential to improve patient safety by preventing errors and reducing medication-related patient harm, and/or by improving efficiency thus allowing pharmacists and pharmacy technicians to practice to full scope and provide more value-added service directly to patients as described in sections 1 through 3.

1. Barcode scanning

The use of barcode scanning in the medication distribution process is well supported by the literature and can lead to a substantial reduction in errors. Barcoding can be used at bedside to confirm the patient's identity, at the point of dispensing from the pharmacy, or when adding medications to packaging machines or automated dispensing cabinets. Use of barcoding significantly reduces the risk of harm to patients. For example, a before and after study of implementation of barcode scanning into the electronic medication administration process demonstrated a reduction in medication errors from 11.5% to 6.8%, a relative reduction of 41.4% ($P < 0.001$). The rate of potential adverse drug events fell by 50.8%, from 3.1% to 1.6% after barcode scanning implementation ($P < 0.001$).³⁸

The Institute for Safe Medication Practices Canada and the Canadian Patient Safety Institute have called for widespread adoption of barcoding. A resource guide exists to support organisations implementing the technology.³⁹

While hospitals in NL utilize barcoding at some points of medication selection at some sites, patients would benefit from more widespread adoption of barcode scanning such as bedside confirmation of the patient's identity and at the point of medication dispensing from the pharmacy. These practices have the potential to reduce errors significantly.

2. Automated dispensing cabinets

Hospitals in NL have been working towards implementing automated dispensing cabinets (ADCs) such as Pyxis and SureMed since 2010. While many hospitals have fully implemented this

technology, there remain hospitals without ADC implementation, such as the Janeway Children's Hospital, and also hospitals with a partially implemented and mixed system such as the Health Sciences Centre. Having a mixed system of traditional cart refills plus ADCs leads to inefficiency and waste, as well as potentially increases the chances of medication errors and delays.

Full implementation of automated dispensing cabinets have a wide range of benefits in terms of increasing efficiency. These include reducing the time required for patients to access the first dose of a new medication, and reducing nursing time involved in tasks such as performing manual end-of-shift narcotic counts, or traveling to night cupboards for after-hours medication access. ADCs also help reduce wasted time for pharmacy staff, for example by avoiding the necessity of preparing and delivering on-demand (PRN) medications to the nursing unit that often are not actually administered.⁴⁰

ADCs also have the potential to reduce the risk of incorrect drug selection for example when nursing staff "borrow" another patient's medication to supply a missing dose, or obtain a dose from a bulk medication location such as a night cupboard or wardstock area.

3. CMAR/EMAR/CPOE

In the CSHP Hospital Pharmacy report 2016/2017, 71% (130/183) of respondents reported that medication administration records (MARs) were generated in hard copy through the pharmacy information system (CMAR), and 23% of those (43/183) reported that MARs were electronic, sharing a common database with the pharmacy information system with online documentation of doses administered (EMAR). Health Authorities within Newfoundland and Labrador are among the minority 30% (54/183) of hospitals who still manually prepare some or all of their MARs on paper.¹¹ CMAR prepared by pharmacy has been shown to significantly reduce medication errors when compared with hand transcription of prescriptions to a paper-based MAR, with medication occurrences per admission dropping approximately 40% from 0.1084 occurrences per admission to 0.0658 ($p < 0.01$).^{41,42}

Computerized provider order entry (CPOE) is also on the rise both in primary care settings and in hospitals across North America.¹² Hospitals in Newfoundland and Labrador have not yet made any progress towards implementing this computerized prescribing practice which involves the prescriber inputting a prescription directly into the software system which is then verified by a pharmacist, rather than the use of traditional hand-written medication orders. CPOE can improve convenience, reduce wait times for medication verification and delivery, and most importantly reduce errors. A 2013 systematic review and meta-analysis found that processing a prescription through a CPOE system reduced the likelihood of error by 48% (95% CI 41% to 55%).⁴³

4. Prescription scanning

The current practice for management of medication orders (prescriptions) in hospital pharmacies in NL is for pharmacy technicians to walk around the hospital picking up carbon copies of written

medication orders, and return them to the pharmacy where they are keyed into the pharmacy information system and checked or electronically verified by a pharmacist. This system is flawed for multiple reasons including the risk of interpreting often poor quality carbon copies of prescriber orders, the wasted time in paying licensed health care professionals to walk around picking up pieces of paper, and the delay associated with hourly (or less often) rounds of the hospital for this purpose. Many hospitals in Canada have adopted prescription scanning, where nursing unit staff scan prescriptions directly to pharmacy computers, thereby reducing wait times for patients to receive medications, freeing up pharmacy staff for more full-scope activities, and reducing errors associated with interpretation of carbon copies.

As well, the ability of pharmacy personnel to process medication orders from an electronically scanned copy presents a novel and innovative opportunity to share workload across sites. This model has been demonstrated in other provinces where pharmacy staff can enter and verify prescriptions remotely, thus giving the ability to staff multiple smaller or rural sites with pharmacists in larger or geographically removed locations, or to share out workload during peak times, disasters or emergencies, times of staff shortage, and so on. In addition, this frees up clinical pharmacists to be able to spend more time on the patient care unit instead of being tied to the hospital dispensary for order verification activities. All of these opportunities combined have the potential to greatly increase the number of pharmacist hours being spent in a team-based environment providing direct patient care.

In addition to the time-savings and potential workload sharing opportunities afforded by prescription scanning, it has also been shown to decrease the time required for patients to receive their first doses of medications. Implementation of digital prescription scanning technology reduced average turnaround time, defined as the time from prescription writing until the time of pharmacist verification, from 1 hour 51 minutes to 1 hour 9 minutes ($p < 0.001$).⁴⁴ This is a clinically meaningful change for patients waiting on potentially life-saving medication, for patients in pain, and so on.

5. Camera verification

Similar to prescription scanning described above, camera checking or verification systems allow for pharmacists in remote areas to supervise work through a live video camera feed. This could entail pharmacists checking chemotherapy preparation happening inside a sterile negative pressure room without having to scrub in, or even more remote applications such as pharmacists in larger centres supervising technicians working in remote or rural areas. Once again systems such as this could help in providing pharmacist staffing to smaller sites, filling in for temporary staff shortages, or allowing the pharmacist to work to full scope on the patient care area without being tied to the dispensary.

Many of these technology-assisted workflow programs within the sterile compounding/IV admixture processes incorporate both camera verification, product image capturing, and barcoding. Systems such as “DoseEdge” as one example, help pharmacy staff to find significantly more errors than with manual checking alone. In a study comparing four hospitals using this technology and four hospitals without, error detection rates were greatly increased (3.13% vs 0.22%, $p < 0.05$), preparation time

was reduced by 2.94 minutes per compounded sterile product, and overall preparation cost was reduced by \$1.60 per product.⁴⁵

6. Gravimetric verification

Error reports submitted to the Institute for Safe Medication Practices (ISMP) consistently show that manual verification of IV admixture preparation is not effective enough at detecting errors. ISMP is a strong advocate of technological systems built into the IV preparation process that digitally assist with the accuracy of the verification process by checking drug, diluent, volume, calculations, labelling, beyond-use dating, and more. Gravimetric verification refers to verifying the accuracy of a final IV product by checking specific gravity or density. Implementation of technology-enhanced systems incorporating barcode scanning, camera verification, and gravimetric verification within the sterile compounding/IV admixture programs are strongly recommended by patient safety advocates to reduce the risk of medication errors.⁴⁶

Conclusion/Final Summary



The data presented in this submission strongly supports the benefit of hospital pharmacists in strengthening our hospital systems. To summarize some key data points, pharmacists reduce readmissions and ED visits when pharmacists are added to teams caring for patients over 80 years of age.²⁰ Pharmacists reduce the rate of readmission at 3 months by 20% when included as part of internal medicine and primary health care teams.³ Only 2 hospitals in our province have technicians performing Best Possible Medication Histories (BPMH) in emergency departments, compared with 87% of hospitals nationally.⁸ And significantly, the health care system saves approx \$4.81 for every \$1 spent on clinical pharmacist services demonstrating that expanding the number of hospitalized patients who are cared for by a team-based pharmacist would pay for itself multiple times over.¹⁰

Our recommendations are broad-reaching and interconnected. Including more pharmacists on interdisciplinary care teams improves patient outcomes such as reducing hospital readmissions. Pharmacy staff performing medication reconciliation at transitions of care both improves quality and provides the opportunity to practice fully to scope. Expanding a hospital pharmacists' scope of practice to include independent prescribing and collaborative practice increases their already high value as members of the care team. And updating technologies in hospital pharmacies enables pharmacy staff to spend more time performing direct patient care as part of interdisciplinary teams.

We thank you again for taking the time to review our submission, and thank the Health Accord Task Force for the vital work you are doing in improving our province's health care system. CSHP NL Branch believes that hospital pharmacists have an important role to play in improving health and health outcomes for Newfoundlanders and Labradorians. This can be achieved through integration of more pharmacists onto inpatient, outpatient and long-term care interdisciplinary teams, through optimization of the pharmacist and pharmacy technician scope of practice, and through adoption of digital technologies within health systems. We welcome your questions or discussion at any point as the Health Accord takes shape.

Sincerely, CSHP NL Branch

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