

CSHP  SCPRS
Webinar Series



Alicia Wall

TECHNOLOGY TRENDS: FINDINGS FROM THE 2023/24 HOSPITAL PHARMACY IN CANADA SURVEY

July 9 @ 1 pm ET



2023/24
Hospital Pharmacy
in Canada **Survey**

Sondage sur les pharmacies
hospitalières canadiennes

Land Acknowledgement

- The Canadian Society of Healthcare-Systems Pharmacy head office is located in Ottawa ON, which is the traditional and unceded territory of the Algonquin Anishnabe, who have lived on this land since time immemorial.
- Please take a moment to reflect on the lands where you are joining from today and learn more about the Indigenous Peoples and history of the lands they inhabit.

CSHP: Education, Advocacy, and Community for Healthcare-Systems Pharmacy

Practice with confidence

- Trusted standards, guidelines, and clinical resources
- Professional liability insurance built for you

Grow your career and feel connected

- Education, conferences, committees, and national networking
- Career support from student to system leader
- Leadership, recognition, and a professional home in healthcare-systems

Be part of a stronger national voice

- Representation at Government roundtables and Non-Government organizations
- Leadership on clinical and operational practice



Housekeeping

- The slides and recording from today's webinar will be posted on CSHP's webinar webpage, along with the recordings of all our past webinars.
- Questions can be submitted at any time during the presentation by typing them into the Q & A section at the bottom of your screen. These will be addressed by the presenter at the end of today's webinar.

Presenter Personal Disclosure

Presenter's Name: Alicia Wall

- **I have no current relationships with commercial entities**
- **I have received no speaker's fee for this learning activity**

Commercial Disclosures

- This survey report has received sponsorship from *Pfizer*, *Apotex* and *Pharmascience*.
- No Board member has received funding for their contribution to the Report.
- The Managing Editor is contracted by CSHP to perform the duties of the role.
- Editorial direction, survey design, analyses and interpretation are the sole purview of the HPC Survey Board.

Hospital Pharmacy in Canada Survey Board



EXECUTIVE EDITOR

Douglas Doucette, BSc(Pharm),
PharmD, FCSHP
Regional Director, Pharmacy Services
Horizon Health Network
Moncton, New Brunswick



MANAGING EDITOR

Carolyn Dittmar, BScPhm, RPh,
BCGP, ACPR, FCSHP
Geriatric Assessment and Intervention
Network (GAIN) Clinic,
Kawartha Lakes, Ontario



FORMER CSHP CEO AND LIAISON

Jody Ciufo, BA(Hons), MBA
Canadian Society of Healthcare-Systems
Pharmacy
Ottawa, Ontario



André Bonnici, BPharm, MSc

Chef du département de pharmacie
Centre Universitaire de Santé McGill
Montréal, Québec



Sammu Dhaliwall, RPh, ACPR, Pharm D

Senior Manager - Business Development,
Research, and Health Innovation
North West Telepharmacy Solutions
Brampton, Ontario



Bal Dhillon, MBA, BSc, PMP, RPEBC-PT

Senior Director, Inventory Control & Demand
Planning , Provincial Health Services Authority
Langley, British Columbia



Allan Mills, BScPhm, PharmD,
MBA, FCSHP

Director of Pharmacy
Trillium Health Partners
Mississauga, Ontario



Shannan Neubauer, BSP, ACPR,
Pharm D, FCSHP

Manager of Pharmacy Services
Saskatchewan Health Authority
Prince Albert, Saskatchewan



Hélène Paradis, BPharm, MSc

Chef du département de pharmacie, Centre
intégré universitaire de santé et de services
sociaux de l'Ouest-de-l'Île de Montréal
Montréal, Québec



Spencer Tuttle, BSc, MPharm, RPh

Executive Director
Lower Mainland Pharmacy Services
Vancouver, British Columbia



Megan Wisnowski, BScP, MPH

Director of Pharmacy Services,
South Zone Alberta Health Services
Medicine Hat, Alberta



Alicia Wall, BSc Pharm, Pharm D,
MHA, CHE

Senior Director
Provincial Pharmacy , NL Health Services
Holyrood, Newfoundland and Labrador

Learning Objectives

- Following this presentation, participants will be able to:
 - Describe the Canadian hospital pharmacy technology landscape with respect to
 - Adoption of electronic health records
 - Implementation and functionality of computerized provider order entry systems
 - Use of closed-loop medication management systems, including barcoding and smart infusion pumps
 - Outline human resources associated with developing and maintaining such systems
 - Highlight regional differences in technology adoption and advancement across Canada
 - Identify emerging technologies in Canadian hospital pharmacy practice



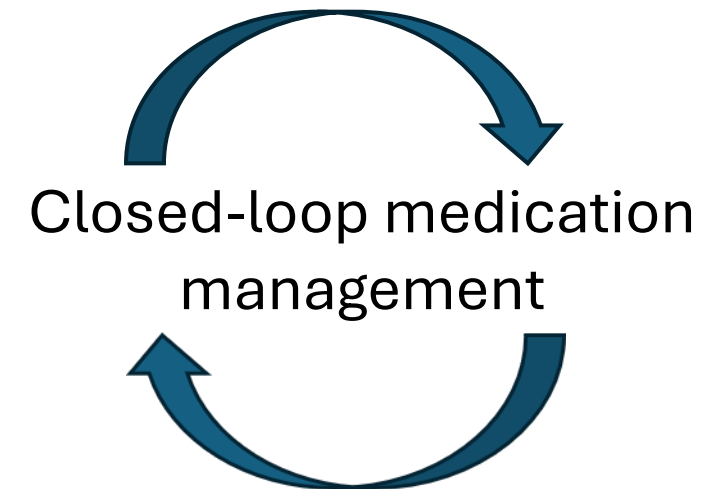
Considerations for Interpretation

- Responses from 2023/24
- Changes in how questions were posed and new questions introduced
- Alberta did not participate in 2020/21 survey and rejoined in 2023/24
 - AB previously grouped with SK and MB, now reported separately

Technology as a Foundation for Safe Medication Use

Hospital pharmacy technology has evolved from stand-alone pharmacy systems to increasingly integrated digital ecosystems supporting

- Electronic health records
- Computerized provider order entry
- Clinical decision support
- Automated dispensing technologies
- Barcode medication administration
- Smart infusion pumps
- Pharmacy informatics and analytics



Ultimate goals are to enhance patient and medication safety and support workflow efficiencies

Digital Maturity Across Canada

Electronic Medical Record Adoption Model (EMRAM)

- Eight-stage rating model

Survey Findings

- **40% of facilities remain at Stage 3 or below**
 - SK/MB, QC, and ATL
- **34% have reached Stage 4 or higher**
 - Major increase from previous survey
- **3% have achieved Stage 7**
 - ON
- **26% of respondents reported their stage is unknown**
 - Greater awareness since previous survey, note inclusion of AB

Canadian hospitals are advancing digitally, but many organizations are still building foundational infrastructure

Electronic Health Records (EHR)

Definition

- **Longitudinal electronic record of patient health information generated as a result of one or more encounters in any care delivery setting**
 - Demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, radiology reports
- **Directly or indirectly via interface supports other activities**
 - Decision support, quality management, outcomes reporting

Benefits

- Shared patient information
- Improved continuity of care
- Foundation for clinical decision support
- Integration across medication-use systems

Adapted from Table G-1 Classification of Respondents' Facilities According to Their Adoption of Various Technologies, 2023/24

	All	Bed Size			Hospital Type			Region					
		50-200	201-500	>500	Teaching	Non-teaching	Pediatric	BC	AB	SK/MB	ON	QC	ATL
Respondents with an Operational Electronic Health Record (EHR), 2023/24													
(n=)	(145)	(52)	(46)	(47)	(47)	(92)	(6)	(27)	(18)	(20)	(30)	(24)	(26)
Yes	99 68%	32 62%	37 80%	30 64%	36 77%	59 64%	4	24 89%	18 100%	6 30%	28 93%	7 29%	16 62%
No	46 32%	20 38%	9 20%	17 36%	11 23%	33 36%	2	3 11%	0 0%	14 70%	2 7%	17 71%	10 38%

Overall relatively little change from previous survey

Computerized Provider Order Entry (CPOE)

Definition

- Process whereby a healthcare provider enters medication orders or other instructions electronically, rather than on paper charts

Benefits

- Reduced transcription errors
- Improved prescribing accuracy
- Standardized workflows
- Enhanced medication safety

CPOE in Canada

Adoption

- 39% of hospitals reported CPOE implementation
- Approximately doubled since the previous survey

Functionality

- Most systems are integrated with pharmacy systems and EHRs
- 91% include clinical decision support
 - Alerting prescribers to unsafe medication orders during order entry
 - Guiding the use of formulary drugs
 - Guiding the use of weight-based or body surface area-based dosing for selected drugs

Adapted from Table G-5 Implementation and Functionality of Computerized Provider Order Entry Systems (Excluding Outpatient Oncology Services), 2023/24

	All	Bed Size			Hospital Type			Region					
		50-200	201-500	>500	Teaching	Non-teaching	Pediatric	BC	AB	SK/MB	ON	QC	ATL
CPOE implementation (excluding oncology)													
(n=)	(148)	(52)	(46)	(50)	(47)	(95)	(6)	(28)	(18)	(20)	(33)	(24)	(25)
Yes	58 39%	15 29%	22 48%	21 42%	22 47%	32 34%	4	6 21%	18 100%	3 15%	24 73%	4 17%	3 12%
No	90 61%	37 71%	24 52%	29 58%	25 53%	63 66%	2	22 79%	0 0%	17 85%	9 27%	20 83%	22 88%
No, and there is <u>no approved plan to implement such a system</u>	34 23%	16 31%	7 15%	11 22%	7 15%	27 28%	0	5 18%	0 0%	17 85%	0 0%	9 38%	3 12%
No, but there is <u>an approved plan to implement such a system</u>	56 38%	21 40%	17 37%	18 36%	18 38%	36 38%	2	17 61%	0 0%	0 0%	9 27%	11 46%	19 76%

Laboratory Integration

Level of Integration

- **Canadian hospitals reported varying levels of connectivity between laboratory and medication systems:**
 - Interfaced laboratory results without alerts
 - Integrated laboratory data with medication alerts
 - Separate laboratory systems

Clinical Value

- **Integrated data can support:**
 - Renal dose adjustments
 - Therapeutic monitoring
 - Drug-laboratory interaction alerts

The benefit of CPOE increases when connected with decision-support systems

Adapted from Table G-3 Pharmacy Personnel Access to Laboratory Results, 2023/24

	All	Bed Size			Hospital Type			Region					
		50-200	201-500	>500	Teaching	Non-teaching	Pediatric	BC	AB	SK/MB	ON	QC	ATL
(n=)	(149)	(52)	(47)	(50)	(48)	(95)	(6)	(28)	(18)	(20)	(33)	(24)	(26)
Through the medication order entry system, with interfaced laboratory system but <u>without</u> automatic alerts to the practitioner	82	28	27	27	28	50	4	21	0	7	16	16	22
	55%	54%	57%	54%	58%	53%		75%	0%	35%	48%	67%	85%
Through the medication order entry system, with fully interfaced laboratory system that automatically alerts practitioners about the need for potential changes in drug therapy	46	12	16	18	15	30	1	6	18	1	16	5	0
	31%	23%	34%	36%	31%	32%		21%	100%	5%	48%	21%	0%
Through a separate login to a laboratory system (<u>no alerts</u> are provided)	21	12	4	5	5	15	1	1	0	12	1	3	4
	14%	23%	9%	10%	10%	16%		4%	0%	60%	3%	13%	15%

Closed-Loop Medication Management

- An electronically integrated medication-use process involving:
 - Electronic prescribing
 - Pharmacy verification
 - Automated dispensing cabinets
 - Smart infusion technology
 - Barcode medication administration

Closed-Loop Medication Management in Canada

- First assessed in the 2023/24 Hospital Pharmacy in Canada Survey
- Most Canadian organizations have not yet achieved full closed-loop functionality
 - Only 32% of respondents reported the use of a closed-loop electronic medication management system

Adapted from Table G-1 Classification of Respondents' Facilities According to Their Adoption of Various Technologies, 2023/24

	All	Bed Size			Hospital Type			Region					
		50-200	201-500	>500	Teaching	Non-teaching	Pediatric	BC	AB	SK/MB	ON	QC	ATL
Respondents with a Closed Loop Electronic Medication Administration System, 2023/24													
(n=)	(144)	(49)	(47)	(48)	(48)	(90)	(6)	(27)	(18)	(18)	(31)	(24)	(26)
Yes	46	13	16	17	16	27	3	5	18	0	22	1	0
	32%	27%	34%	35%	33%	30%		19%	100%	0%	71%	4%	0%
No	98	36	31	31	32	63	3	22	0	18	9	23	26
	68%	73%	66%	65%	67%	70%		81%	0%	100%	29%	96%	100%

Barcoding Technology in Canadian Hospitals

- **57% of respondents reported using barcoding to some extent to verify drug selection before dispensing from the pharmacy**
 - Verify stocking of automated dispensing cabinets (83%)
 - Verify stocking of automated re-packaging machines (81%)
 - Conducting inventory management (54%)

- **40% of respondents reported the use of barcoding to verify drug selection before administration to a patient**
 - Identify the patient during medication administration (36%)
 - Identify the staff member during medication administration (26%)
 - Three of the six pediatric hospitals reported use of barcoding to verify drug selection, the patient and the staff member during medication administration

Smart Infusion Pump Technology

Definition

- Infusion pump with a programmable drug library, including clinical alerts related to drug dose and rate, as well as the ability to store and download usage data for quality assurance, education, and safety purposes
- Formerly Accreditation Canada Required Organizational Practice (Infusion Pump Safety)
- The Institute for Safe Medication Practices recommends bi-directional smart pump inter-operability with the EHR

Adapted from Table G-7 Smart Pumps and Their Integration with the Electronic Health Records (EHR), 2023/24

	All	Bed Size			Hospital Type			Region					
		50-200	201-500	>500	Teaching	Non-teaching	Pediatric	BC	AB	SK/MB	ON	QC	ATL
Facility using smart pumps													
(n=)	(149)	(52)	(47)	(50)	(48)	(95)	(6)	(28)	(18)	(20)	(33)	(24)	(26)
Yes	146 98%	52 100%	45 96%	49 98%	48 100%	92 97%	6	27 96%	18 100%	20 100%	33 100%	22 92%	26 100%
No	3 2%	0 0%	2 4%	1 2%	0 0%	3 3%	0	1 4%	0 0%	0 0%	0 0%	2 8%	0 0%
Base: respondents, n = 149													
Smart Pumps are Integrated with EHR													
(n=)	(144)	(51)	(44)	(49)	(47)	(91)	(6)	(27)	(18)	(20)	(31)	(22)	(26)
Yes	3 2%	0 0%	1 2%	2 4%	1 2%	2 2%	0	1 4%	0 0%	0 0%	2 6%	0 0%	0 0%
No	141 98%	51 100%	43 98%	47 96%	46 98%	89 98%	6	26 96%	18 100%	20 100%	29 94%	22 100%	26 100%
Base: respondents, n = 144													

Smart Infusion Pump Technology in Canada

- Used in almost all Canadian hospitals but full integration is rare
- Implications
 - Programming remains partly manual
 - Documentation may require additional steps
 - Potential safety benefits are not fully realized

Implementation has been successful, integration remains the next challenge

TALLman Lettering

- Only one respondent reported their facility did not use TALLman lettering
- Use increased in all contexts surveyed, except pharmacy-generated medication administration records
 - Pharmacy-generated labels (99%)
 - Pharmacy-generated unit-dose packaging (97%)
 - Pharmacy information system (97%)
 - Automated dispensing cabinets (91%)
 - CPOE environment (43%)
 - Order set/pre-printed orders (89%)
 - Pharmacy shelves (84%) > medication rooms of patient care areas (70%) > medication carts (49%)

Human Resources Supporting Canadian Hospital Pharmacy Technology

- **Pharmacists (61%) were most common personnel**
 - Average (excluding AB) 1.7 FTEs
- **Pharmacy technicians (47%) and pharmacy assistants (35%)**
 - Average (excluding AB) 1.4 FTEs and 1.6 FTEs respectively
- **Non-pharmacy personnel (31%) increased substantially**
 - Average (excluding AB) 2.1 FTEs
- **Smart infusion pump resources surveyed separately**
 - Majority reported drug libraries developed and maintained on a regional or provincial basis
 - Average 0.3 FTEs assigned for those developed and maintained locally
 - More than half indicated no resources were dedicated

Adapted from Table G-2 Average Full-Time Equivalents (FTEs), by Position, Dedicated to Working on the Pharmacy Information System (PIS), 2023/24

	All	Bed Size			Hospital Type			Region				
		50-200	201-500	>500	Teaching	Non-teaching	Pediatric	BC	SK/MB	ON	QC	ATL
(n=)	(34)	(5)	(8)	(21)	(16)	(18)	(0)	(4)	(3)	(9)	(14)	(4)
Pharmacist managers	0.7	0.4	0.7	0.8	0.8	0.7	0.0	1.4	0.7	0.7	0.7	0.2
(n=)	(63)	(11)	(22)	(30)	(24)	(35)	(4)	(13)	(5)	(18)	(18)	(9)
Pharmacists	1.7	1.2	1.9	1.8	2.0	1.5	2.3	2.8	1.1	2.1	1.2	1.0
(n=)	(7)	(1)	(4)	(2)	(3)	(4)	(0)	(1)	(2)	(1)	(0)	(3)
Pharmacy technician/ Pharmacy assistant managers	0.4	0.2	0.6	0.2	0.2	0.6	0.0	0.3	0.6	1.0	0.0	0.2
(n=)	(44)	(9)	(18)	(17)	(17)	(26)	(1)	(9)	(6)	(20)	(4)	(5)
Pharmacy technicians	1.4	1.2	1.3	1.8	1.5	1.4	2.0	2.0	0.9	1.4	1.1	1.6
(n=)	(29)	(3)	(7)	(19)	(14)	(15)	(0)	(4)	(4)	(0)	(16)	(5)
Pharmacy assistants	1.6	1.7	1.3	1.7	1.2	2.0	0.0	1.5	0.9	0.0	1.8	1.4
(n=)	(24)	(3)	(11)	(10)	(13)	(10)	(1)	(9)	(0)	(9)	(5)	(1)
Non-pharmacy personnel	2.1	4.6	2.0	1.6	1.0	3.5	3.8	3.9	0.0	1.4	0.6	1.0

AB

Pharmacist
Managers – 4 FTEs

Pharmacists –
29 FTEs

Pharmacy
Technician/
Pharmacy Assistant
Managers – 0 FTEs

Pharmacy
Technicians – 22 FTEs

Pharmacy Assistants
– 0 FTEs

Non-Pharmacy
Personnel – 9 FTEs

Technologies Emerging Across Canada

↓ scanning of medication orders and secure transmission to a pharmacist at a remote location for review (52%)

- Related to increased adoption of CPOE?

↓ use of telecare for consultation or services provided to patients in other facilities or at home (25%)

- Greatest decrease ON, substantial increase in QC

• **Greatest growth in sterile compounding technologies**

↑ use of cameras to manage workflow

↑ use of gravimetric-based workflow

• **Marginal increase in inventory management technologies such as carousels and RFID**

• **Artificial intelligence remains uncommon in pharmacy practice**

- 2 respondents in ON and 2 respondents in QC

Summary

- Technology adoption continues to expand across Canadian hospitals with opportunities for continued implementation and optimization
- EHRs are relatively common and implementation has been stable while CPOE adoption increased substantially
- Closed-loop medication management remains an important opportunity for growth
- Smart infusion pumps are nearly universal, but interoperability is limited
- Variation exists across and within provinces
- Pharmacy informatics is a growing field for pharmacy professionals
- Pharmacy leaders can drive change



Hospital Pharmacy in Canada

Survey Report 2023/24

Hospital Pharmacy in Canada Survey Board

Current and previous publications of the
Hospital Pharmacy in Canada Survey Report
available at

<https://www.cshp.ca/Site/website/Content/Resources/hospital-pharmacy-report-archives.aspx>

alicia.wall@nlhealthservices.ca



Housekeeping

- When you exit this webinar, you will be taken to a feedback survey on the presentation. Please provide your feedback and suggestions on future topics!
- The slides and recording from today's webinar will be posted on CSHP's webinar webpage, along with all our past webinars.

Professional development opportunities



CSHP Advocacy Town Hall

*Speakers: Mary Gunther,
Karla Thorpe, Rita Dhami*

July 16



Oncology Hybrid Webinar Series

Don't Go Breaking My Heart: Common Problems in Cardio-Oncology

Speaker: Margaret Sidsworth
HYBRID

July 23



Navigating Fear in Leadership

Speakers: Barret Blue

July 29

CSHP  SCPRS
Webinar Series



Allan Mills

LEVERAGING DATA FROM THE 23/24 HOSPITAL PHARMACY IN CANADA SURVEY TO GUIDE DRUG DISTRIBUTION DECISIONS

August 25 @ 1 pm ET



2023/24
Hospital Pharmacy
in Canada **Survey**

Sondage sur les pharmacies
hospitalières canadiennes

Thank you!