Executive Summary

2023/24 Hospital Pharmacy in Canada Survey

CSHP Hospital Pharmacy in Canada Survey Report 2023/24

The Hospital Pharmacy in Canada Survey Board

The *Hospital Pharmacy in Canada 2023/24 Survey Report* provides an important snapshot of the state of pharmacy services in hospitals across the country. This report is the 23rd edition of the survey report and carries on the tradition of documenting current statistics and analyzing longer-term trends in hospital pharmacies in Canada.

The report looks at how hospital pharmacy is evolving, from the expansion in clinical responsibilities of pharmacy personnel to the uptake of technologies and challenges in human resources.

The report includes analysis of key results, benchmarking for metrics such as staffing ratios, and charts progress against key performance indicators, making it a useful tool for planning, budgeting and internal advocacy. New in this edition of the report, in D – Human Resources, are ratios for full-time equivalents (FTEs) (of pharmacy staff) per 100 acute care beds, based on the number of acute care beds, not the occupancy rate. Alberta participated in this edition of the survey (after being unable to participate in the 2020/21 survey) and for the first time Alberta data is presented separately from the other Prairie provinces, Saskatchewan and Manitoba.

A special section in this report, Hot Topics in 2023/24 highlights how pharmacy departments in both large and small hospitals are responding to challenges related to the environment, emergency preparedness, digital transformation and disruptions in the pharmaceutical supply chain.

Methodology

This 23rd edition of the *CSHP Hospital Pharmacy in Canada Survey* is a descriptive cross-sectional study intended to build a profile of hospital pharmacy practice in Canada between April 1, 2023, and March 31, 2024 in both large and small hospitals (where small hospitals were defined as having fewer than 50 acute care beds). Data was collected from September to December 2024, through a third party, Leger Healthcare, using the Forsta survey tool.

A – Demographics

Survey Participation and Regional Representation

In 2023/24, 151 of 259 eligible hospitals (≥ 50 acute care beds) participated in the CSHP survey, representing a 58% response rate, down from 63% in 2020/21. Alberta rejoined the survey with a 100% response rate (18/18) and, for the first time, is reported as a standalone region. Response rates increased in several provinces, notably Quebec (83%), while declines were observed in Ontario (34%) and Saskatchewan (50%). The lower overall survey response rate partly reflects the increase in multi-facility reporting.

Hospital Capacity: Beds and Reporting Structure

Despite fewer respondents, reported capacity increased. Respondents reported 51,786 acute care beds and 32,228 non-acute care beds, up from 42,578 and 28,153, respectively, in 2020/21. Quebec accounted for 30% of the acute care beds and 74% of the non-acute care beds nationally, reflecting extensive consolidation and multi-site reporting. Overall, 35% of respondents submitted data for more than one facility, rising to 75% in Quebec and 60% among hospitals with greater than 500 beds.

Bed Utilization and Occupancy

Hospital utilization indicators increased notably. The average acute care occupancy rate was 94%, up from 81% in 2020/21 and slightly higher than pre-pandemic levels. Non-acute care occupancy averaged 91%. Regional variation was evident, with non-acute care occupancy exceeding 100% in British Columbia (106%) and reaching 99% in Ontario, indicating sustained system pressures.

Length of Stay

The average length of stay (ALOS) for acute care admissions increased to 7.6 days, compared with 6.9 days in 2020/21, surpassing historical norms over the past two decades. Facilities with > 500 beds and non-teaching hospitals reported longer stays. Regionally, Saskatchewan/Manitoba (SK/MB) had the highest ALOS (9.6 days), while Ontario reported the lowest (6.5 days). These variations align with Canadian Institute for Health Information (CIHI) observations linking ALOS to patient complexity, demographics, and access to alternate levels of care.

Pediatric Hospitals

Six pediatric hospitals participated in the 2023/24 survey, reporting 1,249 acute care beds, down from 1,375 in 2020/21. Pediatric hospitals showed lower utilization, with 64% average occupancy rates and a shorter ALOS of 4.5 days, both lower than the previous survey. These results likely reflect differences in case-mix and models of pediatric care delivery.

Emergency Department and Ambulatory Activity

Demand indicators rose sharply. The average annual number of Emergency Department (ED) visits was 74,956, representing an approximately 50% increase compared with 2020/21. Similarly, average annual outpatient and ambulatory clinic visits reached 175,423, about 15% higher than in 2020/21. Teaching hospitals and facilities with >500 beds reported substantially higher visit volumes, highlighting the expanding role of hospitals in ambulatory and outpatient care.

Key Points for Pharmacy Leaders

- System pressure is intensifying: Higher occupancy rates, longer lengths of stay, and sharp increases in ED and ambulatory visits point to sustained demand across care settings.
- Capacity growth is unevenly distributed: Quebec and large hospitals account for a disproportionate share of beds and services, influencing national averages and benchmarking.
- Multi-site service models are expanding: Over one-third of respondents now report for multiple facilities, with implications for pharmacy governance, staffing models, and workload measurement.
- Planning must reflect post-pandemic realities: Utilization metrics now exceed pre-COVID levels, underscoring the need for pharmacy leaders to reassess resource allocation, clinical coverage, and service prioritization.

B – Clinical Pharmacy Practice

Clinical pharmacy practice in Canadian hospitals continues to evolve toward greater integration in direct patient care, with a growing emphasis on outcomes, workforce optimization, and professional satisfaction. Data from the 2023/24 survey demonstrates that pharmacist involvement in clinical programs is strongly associated with improvements in patient safety, care quality, and provider job satisfaction. This section examines how clinical pharmacy resources are deployed across inpatient and outpatient programs, the scope of clinical activities performed, the adoption of clinical pharmacy key performance indicators (cpKPIs), and the evaluation of clinical pharmacy services across regions.

Patient Care Programs

Inpatient Programs

Clinical pharmacists are most frequently assigned to inpatient programs with high acuity and complexity. Across all hospital bed sizes, the most common programs include critical care, medicine/family practice, obstetrics/women's health, operating room, and general surgery.

- The most common inpatient programs with pharmacist assignment were critical care, medicine/family practice, oncology, transplant, and cardiology.
- Larger hospitals (with >500 beds) were more likely to assign pharmacists to geriatrics, infectious disease, mental health, pediatric critical care, and general surgery.
- Québec reported the highest rate of pharmacist assignment to clinical research units (100%, 14/14 respondents).
- Ontario and Québec had the greatest number of facilities with pharmacists assigned to geriatric, chronic/complex care, and long-term care units.

Outpatient Programs

Outpatient clinical pharmacy services continue to expand, with emergency department (ED) services seeing the most significant growth in pharmacist assignment.

- 85% (126/148) of facilities reported providing emergency department services.
- Pharmacist assignment to ED programs increased from 38% (46/120) in 2020/21 to 78% (98/126) in 2023/24.
- Québec facilities reported the most outpatient programs, averaging 19 programs per facility.
- Oncology, nephrology/renal/dialysis, and emergency services were the outpatient programs most commonly supported by pharmacists.
- Pediatric facilities had the highest number of outpatient programs with pharmacist assignment (average of 11.5 per facility).

Profile of Clinical Pharmacy Activities

Clinical pharmacy services focus on optimizing medication therapy and enhancing patient outcomes through both direct patient care and system-level activities.

- Most clinical activity levels remained unchanged compared to 2020/21.
- Pharmacist involvement in medication-related continuity of care for discharged patients declined from 52% (75/143) in 2020/21 to 33% (49/148) in 2023/24, reflecting more specific survey wording related to direct pharmacist involvement.
- Pharmacist-led discharge education increased from 17% (25/143) to 26% (38/147) in 2023/24.
- Pharmacist involvement in pharmacogenomic dose adjustment more than doubled, increasing from 13% (19/143) to 28% (41/148) in 2023/24.

Clinical Pharmacy Key Performance Indicators (cpKPIs)

Medication reconciliation on admission remains the most widely implemented cpKPI.

- 60% (89/148) of facilities reported implementing medication reconciliation on admission.
- Implementation of pharmaceutical care plans increased from 24% in 2020/21 to 40% in 2023/24.
- Comprehensive direct patient care bundles increased from 18% to 33% over the same period.

Despite improvements in implementation, data collection remains limited:

- A high percentage of respondents reported no cpKPI data collection in 2023/24.
- Alberta and the SK/MB region reported the highest proportions of facilities not collecting cpKPI data, primarily due to documentation and workload barriers.
- Only 29% (43/147) of respondents reported collecting performance indicators beyond cpKPIs.

Pharmacy Practice Models

Pharmacy practice models have shifted significantly toward direct patient care, reflecting a national move away from distributive-only roles.

- Only 1% (2/147) of respondents reported pharmacists working exclusively in direct patient care due to clinical activities.
- The proportion of pharmacists working exclusively in distributive roles dropped dramatically from 38% (54/142) in 2020/21 to 1% (1/147) in 2023/24.
- Regional variation persists, with British Columbia and SK/MB reporting more balanced time between distributive and patient care activities.

Evaluation of Clinical Pharmacy Services

Evaluation of clinical pharmacy services remains inconsistent across the country.

- Only 49% (72/147) of facilities evaluated direct patient care pharmacy services.
- Clinical documentation was the most commonly evaluated element, reviewed by 85% of evaluating facilities.
- Alberta had the highest proportion of facilities with mechanisms to measure medication-related patient outcomes (94%, 17/18).
- Only 35% (52/148) of respondents reported collecting patient feedback regarding their experience with a hospital pharmacist.

Workforce Challenges

Pharmacist shortages were cited as a significant barrier in multiple provinces, affecting service delivery and scope of practice. Some facilities reported increased reliance on nursing staff for medication reconciliation and reduced coverage of clinical programs. Strategies proposed by respondents included clinical coordinators and enhanced training for non-residency-trained pharmacists.

Key Points for Pharmacy Leaders

- Clinical pharmacy services are increasingly integrated into inpatient and outpatient care, particularly in critical care, emergency, oncology, and geriatric programs.
- Emergency department pharmacist coverage nearly doubled between 2020/21 and 2023/24, representing a major shift in outpatient practice.
- While cpKPI implementation has improved, data collection remains low, limiting performance benchmarking and outcome measurement.
- Pharmacy practice models continue to move away from distributive roles toward direct patient care, though regional variation persists.
- Less than half of respondents formally evaluate clinical pharmacy services, and patient feedback collection remains limited.
- Workforce shortages risk undermining progress and require strategic investment in staffing, training, and clinical leadership.

C – Drug Distribution Systems

Drug distribution remains the core operational function of Canadian hospital pharmacy departments and a critical determinant of medication safety, efficiency, and patient outcomes. Survey data confirm a continued, gradual shift toward safer and more technology-enabled distribution systems, with declining reliance on traditional models and broader adoption of automation, standardized unit-dose packaging, and electronic workflows.

Continued Dominance of Unit-Dose Systems

- Unit-dose distribution remains the standard of care, used by 77% of facilities for acute care, unchanged from 2020/21.
- Traditional distribution systems declined markedly:
  - Used by 12% of facilities in 2023/24 (down from 21% in 2020/21).
- Decentralized unit-dose via automated dispensing cabinets (ADCs) continues to expand:
  - 66% of facilities report use.
  - Approximately 39% of acute care beds are serviced by this type of system.
- Québec continues to lead nationally, with 84% of acute care beds supplied via centralized unit-dose systems.

Widespread Use of Automated Dispensing Cabinets (ADCs)

- 91% of facilities use ADCs, continuing steady growth over the past decade.
- ADCs are universal in Ontario and Atlantic Canada.
- Profiling of ADCs (patient-specific access) is high in inpatient units but remains lower in high-turnover areas such as emergency departments and operating rooms.

Targeted Adoption of Robotic and Compounding Automation

- 21% of facilities use robotic automation for medication distribution, with higher uptake in large (>500 beds) and teaching hospitals, particularly in Ontario and British Columbia.
- Most respondents do not use automated parenteral admixture devices; all pediatric facilities (6/6) reported using automated compounding devices.

Pharmacy Hours, After-Hours Review, and Safety

- Average pharmacy operating hours: 79 hours/week.
- Only 11% of respondents operate 24/7, with 53% (9/17) in Ontario

- After-hours safety improved:
    - Alberta reports 100% review of at least 95% of routine medication orders before access when the pharmacy is closed.
    - Overall, after-hours review of medication orders before access from ADCs, wardstock, or night cupboards increased modestly compared with 2020/21.

Non-Hazardous Sterile Compounding

- Compounding is distributed across multiple providers, with no single dominant model
    - External contractors used by 94% of facilities (mean 23% of doses).
    - Pharmacy departments or the organization provide a mean 32% of doses.
    - Non-pharmacy personnel prepare a mean 44% of doses in patient care areas.
- Compliance with NAPRA/OPQ physical space requirements remains limited
    - Only 53% reported full compliance.
    - Québec leads with 87% compliance.

Hazardous Sterile Compounding

- Stronger pharmacy control continues
    - 96% of hazardous doses prepared by pharmacy departments or the organization.
    - 81% of facilities rely on pharmacy services for ≥ 90% of sterile hazardous doses.
- Closed-System Transfer Devices (CSTDs)
    - Used by 80% of facilities (up from 53% in 2020/21).
    - 71% of Ontario facilities using CSTDs, are using it to extend beyond-use dating.

Gains in Medication Traceability and Digital Records

- The ability to trace medications to specific patients increased to 64% of respondents, with Alberta reporting full traceability.
- Use of electronic medication administration records (eMARs) continues to rise, though hard-copy MARs remain common in smaller hospitals and some regions.

Expanded Role in Community-Based Care

- 41% of hospitals provide medications to community-based outpatients without compensation, most commonly home IV medications, special-access drugs, and clozapine.
- Patterns vary significantly by province, reflecting regional policy and funding models.

Inventory Practices Reflect Pandemic-Era Caution

- Average inventory turnover declined slightly to 7.4 turns per year, suggesting hospitals continue to hold larger on-hand inventory post-COVID-19.
- Ontario and Québec report higher turnover ratios than the western provinces.

Key Points for Pharmacy Leaders

- Medication safety infrastructure continues to mature, driven by unit-dose systems, ADCs, and targeted automation.
- ADCs are now standard infrastructure, but optimization through patient-specific profiling remains inconsistent.
- Robotic automation adoption is modest, suggesting opportunity but also resource and integration barriers.
- System-level integration matters: Alberta's experience demonstrates that provincial digital platforms enable safer and more consistent after-hours medication review.
- NAPRA compliance in sterile compounding, especially physical infrastructure, remains variable, with Québec continuing to set the benchmark.
- Inventory practices remain conservative, prioritizing resilience over efficiency in the post-pandemic context.
- Unfunded outpatient medication supply is common, raising sustainability and policy alignment concerns for hospital pharmacy departments.
- Ongoing investment is needed in digital transformation, workforce models, and regulatory compliance to sustain safety gains and support expanding roles in outpatient and community care.

D – Human Resources

Effective health workforce planning remains critical in the face of sustained workload pressures and burnout among pharmacy professionals. According to CIHI, in 2023, Canada had 48,312 pharmacists (120.5 per 100,000 people) and an average of 36 pharmacy technicians per 100,000 people. Workforce growth has been modest over the past decade, with pharmacist graduates increasing only from 1,180 (2014) to 1,275 (2023). More than 60% of pharmacists employed in direct patient care in Canada graduated from Canadian institutions, and the proportion working in hospitals has remained stable at approximately 20.4% in 2023.

Vacancy Rates and Human Resource Shortages

Hospital pharmacy vacancy rates increased compared to 2020/21. For pharmacists (staff and advanced practice), the vacancy rate excluding leaves of absence (LOA) was 6.2%, rising to 9.3% when LOAs were included. The highest vacancy rates were observed in the Atlantic region (12.5% excluding LOA) and Québec (16.8% including LOA). Pharmacy technician vacancies also increased to 6.3% (excluding LOA), with particularly high rates in the Atlantic region (18.7%). In contrast, vacancy rates for pharmacist managers remained low at 2.4%.

Staffing Ratios and Resource Allocation

Staffing ratios, expressed as budgeted hours per patient day, continued to increase nationally, reflecting sustained investment in hospital pharmacy services. In 2023/24, the average inpatient budgeted hours per acute patient day was 1.08, compared with 0.80 in 2011/12. Teaching hospitals consistently reported higher staffing ratios than non-teaching hospitals, while pediatric hospitals had the highest ratios across all measures. Regionally, Québec and the Atlantic region reported the highest inpatient staffing ratios, for acute patient days, while Atlantic and Alberta were highest when non-acute patient days were also included.

Composition of the Hospital Pharmacy Workforce

The typical hospital pharmacy department expanded across most staff categories. Average staffing levels increased to 21.1 FTE staff pharmacists and 14.6 FTE advanced practice pharmacists, for a combined average of 29.0 FTE pharmacists, up from 22.6 FTEs in 2020/21. Technical staffing also grew, with averages of 21.8 FTE pharmacy technicians and 25.5 FTE pharmacy assistants. Marked regional variation in workforce composition persists, particularly in the ratio of pharmacy technicians to pharmacy assistants, ranging from 10:1 in Ontario to 1:1 in Atlantic Canada and SK/MB.

Pharmacy Staff Ratios per Acute Care Number of Beds

A new benchmarking metric, FTEs per 100 acute care beds, showed an average of 20.7 total pharmacy staff FTEs (inpatient and outpatient combined) per 100 beds across Canada. Pediatric hospitals (33.9 FTEs per 100 beds) reported the highest total pharmacy staff ratios compared to teaching and non-teaching hospitals. The Atlantic region (26.1 per 100 beds) reported the highest total pharmacy staff ratios, demographically.

Salaries and Compensation Trends

Salaries increased across all pharmacy roles, with continued regional variation. Average starting and top salaries for staff pharmacists were $100,666 and $122,367, respectively, while advanced practice pharmacists averaged $109,561 (starting) and $132,567 (top). Alberta reported the highest pharmacy technician top salary at $100,732, the first jurisdiction to exceed the $100,000 threshold for this group. Among pharmacy directors, 56% earned $160,000 or more, rising to 83% in Québec and 67% in Ontario.

Key Points for Pharmacy Leaders

- Vacancy pressures are increasing, particularly among pharmacists and pharmacy technicians, with the highest impact in the Atlantic region and Québec.
- Staffing ratios per patient day continue to rise, indicating longterm growth in hospital pharmacy departments despite workforce shortages.
- Workforce composition varies significantly by region, especially in the balance between pharmacy technicians and pharmacy assistants, with implications for scope of practice and service models.
- Pediatric hospitals consistently demonstrate the highest staffing intensity across multiple benchmarks.
- Compensation continues to climb, with notable regional disparities and a milestone achieved in Alberta for pharmacy technician salaries.
- Leaders are encouraged to use these benchmarks to support workforce planning, justify resource requests, and guide recruitment and retention strategies.

E - Benchmarking

Benchmarking remains a core tool for Canadian hospital pharmacy leaders to assess service delivery, staffing models, and drug expenditures relative to national peers. Data from the 2023/24 Survey Report, provides paid-hours based staffing ratios and drug cost metrics across inpatient and outpatient services, enabling evidence-informed workforce planning and resource optimization.

Staffing Benchmarks – Inpatient Services

Across inpatient programs, pharmacist staffing per bed declined compared with 2020/21, coinciding with a 19% increase in total reported inpatient beds. This underscores the importance of interpreting national medians in the context of hospital mix and overall workforce trends.

- The highest median pharmacist paid hours per inpatient bed were observed in:
  - oncology with 159.1 hours
  - adult critical care with 139.1 hours
- Median pharmacist hours per patient day were relatively stable across most programs, with adult critical care remaining highest at 0.5 hours.
- Pharmacy technician and pharmacy assistant roles continued to focus primarily on drug distribution, with only 7% of their paid hours allocated to clinical services.
- For inpatient services overall, drug distribution activities performed by pharmacy technicians and/or pharmacy assistants, accounted for 50.8% of total paid hours, followed by pharmacist decentralized clinical services at 23.9%.

Staffing Benchmarks – Outpatient Services

Outpatient benchmarking highlights ongoing resource concentration in oncology services.

- Oncology remained the most resource-intensive outpatient program, with median total paid hours of 63.7 per 100 visits.
- Median pharmacist paid hours per 100 outpatient visits were:
  - oncology 31.9 hours
  - Emergency Department 4.9 hours
  - dialysis 9.8 hours
- Similar to inpatient care, pharmacy technicians and pharmacy assistants were predominantly assigned to distribution activities, suggesting unrealized potential to expand their clinical integration in outpatient programs.

Drug Cost Benchmarks – Inpatient Care

Inpatient drug expenditures showed notable growth, particularly in high-acuity programs.

- The largest increases in median drug cost per inpatient admission since 2020/21 were seen in:
  - adult critical care: $1,406.80 (vs. $762.25)
  - medicine: $410.70 (vs. $258.87)
- Median drug costs per patient day were highest in adult critical care at $118.20, reflecting both patient acuity and therapy intensity.
- Limited response numbers prevented reporting of oncology inpatient drug costs for 2023/24.

Drug Cost Benchmarks – Outpatient Care

Outpatient drug costs varied widely by program.

- Oncology had the highest median drug cost per visit at $603.00, far exceeding other services.
- Dialysis drug costs increased six-fold, from $4.30 in 2020/21 to $25.80 in 2023/24, likely reflecting newer therapies or higher infusion volumes.
- Emergency and "Other" outpatient services remained relatively low-cost, with medians of $11.20 and $5.10 per visit, respectively.

Key Points for Pharmacy Leaders

- Benchmarking based on paid hours provides a more accurate representation of workforce capacity in an era of staffing shortages and increasing patient acuity.
- Pharmacist staffing per bed has declined nationally, while inpatient bed volumes have increased, highlighting growing pressure on clinical services.
- Oncology and adult critical care continue to be the most resource-intensive programs for both staffing and drug costs.
- Pharmacy technicians and pharmacy assistants remain underutilized in clinical roles, representing a potential opportunity for service redesign.
- Rising drug costs in adult critical care, medicine, and outpatient dialysis emphasize the need for proactive medication management and budgeting strategies.

F – Pharmacy Technician Practice

This section of the report examines the evolving role of pharmacy technicians in Canadian hospital pharmacy practice, with comparisons to earlier survey reports. It highlights workforce trends, scope of practice, technology integration, regulatory impact, and opportunities for role optimization to support patient safety, service capacity, and workforce sustainability.

Regulation and Workforce Profile

Pharmacy technician regulation continues to expand nationally and has contributed to workforce growth and integration into hospital practice.

- As of January 2025, Canada had 11,541 regulated pharmacy technicians, an increase of nearly 1,600 since 2020/21.
- 53% (6,138/11,541) were known to be practicing in hospital pharmacy, up from 49% in 2020/21.
- Regulation remains provincially variable, influencing pharmacy technician availability and scope of practice, with limited pharmacy technician presence in Québec during the 2023/24 fiscal year.

Integration into Technical and Clinical Supporting Roles

Hospitals reported substantial variation in the adoption and utilization of pharmacy technicians.

- 40% of respondents reported that >90% of technical staff were pharmacy technicians, with higher adoption in smaller hospitals (50–200 beds).
- Pharmacy technicians and pharmacy assistants most commonly supported pharmacists by acting as the initial liaison for resolving drug distribution issues on patient care units (71%) and contributing to medication reconciliation at admission (67%), with pharmacy technician involvement exceeding that of pharmacy assistants.
- Participation in advanced or patient-facing tasks such as medication reconciliation at discharge, data presentation to committees, and patient counselling support remained limited.

Expansion of Checking, Verification, and Advanced Functions

The scope of pharmacy technician responsibilities has expanded significantly over time.

- Pharmacy technician checking of compounded chemotherapy products increased from 20% (2009/10) to 72% (2023/24).
- High and sustained technician involvement was reported for checking tray fills (93%) and automated dispensing cabinet fills (87%).
- Pharmacist responsibility declined in several operational areas, including dispensary supervision and distribution center oversight, signaling continued task redistribution.

Technology and Workload Impacts

Technology adoption has had mixed effects on pharmacy technician workload.

- Barcode medication systems and IV workflow management systems were most often reported to increase pharmacy technician workload (68% and 59%, respectively).
- CPOE and automated systems (sterile compounding and packaging) were more frequently associated with workload reductions.
- Overall, technology has shifted workload rather than uniformly reducing it.

Organizational Support for Scope Expansion and Governance Roles

Survey respondents expressed strong support for some expanded pharmacy technician functions but variable acceptance of others.

- 89% supported pharmacy technicians independently destroying unserviceable narcotics and controlled substances.
- Approximately 50% supported pharmacy technicians administering medications, witnessing ingestion of opioid replacement therapy, or receiving verbal orders for controlled substances, with notable regional variation.
- Involvement of pharmacy technicians on hospital committees remained modest, primarily limited to Medication Safety and Quality Improvement committees.

Impact of Regulation and Workforce Sustainability

The regulation of pharmacy technicians has delivered predominantly positive organizational impacts.

- 76% of respondents reported a decrease in pharmacist workload.
- 67% reported creation of new positions, and 65% reported enhanced patient care.
- To address pharmacy technician shortages, hospitals most commonly invested in professional development, financial incentives, and retention-focused strategies, with the Atlantic region and BC showing particularly proactive approaches.

Key Points for Pharmacy Leaders

- Regulated pharmacy technicians are essential to service capacity and workforce resilience, with growing presence in hospital settings.
- Task redistribution is freeing pharmacists for higher-value clinical work, but adoption and scope vary widely across regions.
- Technology improves safety but may increase technical workload without deliberate workflow redesign.
- Leadership support, standardized training, and clear governance frameworks are critical to safely expanding pharmacy technician roles.
- Structured career pathways and inclusion in quality and safety initiatives represent important levers to improve retention, engagement, and system performance.

G – Technology

Technology continues to transform Canadian hospital pharmacy practice, with measurable progress in digital maturity, clinical decision support, and medication safety systems. Findings from the 2023/24 Survey Report show gradual national improvement, with marked regional variation and substantial opportunities to further strengthen patient safety and system integration.

Digital Maturity and Health Information Systems
Canadian hospitals continue to advance in electronic medical record (EMR) utilization, as measured by the Health Information and Management Systems Society Electronic Medical Record Adoption Model (EMRAM).

- 34% of facilities operate at EMRAM stage ≥4, more than doubling since 2020/21 (14%).
- 21% operate at EMRAM stage 6, driven largely by Alberta (100%) and increasing adoption in Ontario (35%).
- Only 3% of facilities reached stage 7, although this represents continued progress.
- Notably, 26% of respondents were unsure of their EMRAM stage, highlighting a prominent awareness gap for leadership.

Electronic health record (EHR) implementation remains stable at 68% of facilities, with the highest uptake in teaching hospitals (77%), facilities with 201–500 beds (80%), and in Alberta (100%), Ontario (93%), and BC (89%). Adoption remains lowest in Québec (29%) and SK/MB (30%). Gains in digital maturity therefore appear to reflect optimization of existing systems and adoption of ancillary technologies rather than new EHR deployments.

Medication Use System Integration
Closed-loop electronic medication management systems, the benchmark for medication safety, remain limited nationally.

- Only 32% of respondents reported use of a closed-loop system.
- Adoption is highly regional, concentrated in Alberta (100%) and Ontario (71%), with minimal uptake elsewhere.

Access to laboratory data with decision support remains suboptimal.

- Just 31% of respondents reported systems that automatically alert clinicians to potential therapy changes based on lab results.
- Overall, 69% of respondents lacked automated lab-based alerts for a change in drug therapy.

Pharmacy Informatics Workforce
As systems grow more complex, the demand for informatics expertise continues to rise.

- Pharmacists remain the primary workforce supporting the Pharmacy Information System (PIS) and other technologies (61%; average 1.7 FTEs, excluding Alberta).
- Pharmacy technicians hold informatics roles in 47% of facilities (average 1.4 FTEs).

- Non-pharmacy personnel support the PIS and other pharmacy technologies in 31% of facilities, averaging 2.1 FTEs.
- Alberta reported a substantially larger provincial-level informatics team aligned with its province-wide system.

Computerized Provider Order Entry (CPOE)

Adoption of Computerized Provider Order Entry (CPOE) continues to accelerate, doubling since the previous survey.

- 39% of respondents reported using CPOE, up from 19% in 2020/21.
- 84% of CPOE systems were bi-directionally integrated with the PIS or function as a single, integrated hospital information system requiring no interfaces.
- Most systems provided alerts to prescribers of unsafe medication orders (98%), formulary guidance (96%), and weight-based dosing support (96%).
- Uptake was highest in Alberta (100%) and Ontario (73%).

Smart Pumps

- 98% of facilities used smart pumps, now nearly universal.
- Only 2% reported bi-directional integration with the EHR, despite the United States Institute for Safe Medication Practices recommendation.

Barcoding

Barcoding is widely used in pharmacy operations, such as dispensing and inventory management, but adoption during medication administration remains limited.

- 57% of facilities used barcoding to some extent to verify drug selection before dispensing, but only 40% used barcoding to some extent to verify drug selection before administration.
- Patient identification by barcode occurred to some extent in 36% of facilities.
- Use in sterile compounding increased to 42%, doubling since 2020/21.

Other Medication Safety Initiatives

- TALLman lettering was nearly universal within pharmacies (99% on pharmacy-generated labels), with notable growth in patient care areas and CPOE environments.
- Standard medication nomenclature was widely reported and has expanded since 2020/21, though changes in survey wording warrant cautious interpretation of trend comparisons.

Emerging Technologies

Growth was strongest in technologies supporting sterile compounding. Telecare use has declined overall since the pandemic peak, with notable regional variation. Inventory technologies such as radio frequency identification and carousel systems show modest growth.

- 48% of respondents use camera-based remote verification in sterile compounding (up from 37%).
- 20% of respondents use gravimetry-based IV workflows (up from 10%).
- Use of telecare declined to 25% nationally, with notable increases only in Québec (71%).
- Artificial intelligence remains rare (3% of respondents), limited to a small number of of mid- to large-sized facilities facilities.

Key Points for Pharmacy Leaders

- Digital maturity is improving, but leadership awareness of system capability remains inconsistent.
- Closed-loop medication systems and lab-driven alerts represent the largest untapped safety opportunities.
- CPOE adoption is accelerating, though regional disparities persist.
- Growing technological complexity has increased the demand for pharmacy informatics expertise including non-pharmacy personnel, reflecting the interdisciplinary nature of informatics work.
- Smart pump and barcoding interoperability remain priority areas for improving medication safety.

H – Hot Topics in 2023/24

Hospital pharmacy departments across Canada responded to questions about converging pressures that are reshaping practice: environmental sustainability, disaster preparedness, artificial intelligence (AI) and cybersecurity, drug shortage mitigation, and alternative methods of providing care. This section of the report highlights both promising practices and persistent gaps across large and small hospitals.

Environmental Sustainability

Environmental sustainability has emerged as a critical priority, reflecting the healthcare sector's significant contribution to greenhouse gas emissions. Pharmaceuticals alone account for approximately 25% of healthcare-related emissions, highlighting pharmacy's potential leadership role.

- At the organizational level, 46% of large hospital respondents and 36% of small hospital respondents (less than 50 acute care beds) reported that environmental sustainability was included in their strategic plans, with wide regional variation.
- At the pharmacy department level, formal integration was much lower: only 24% of large hospital and 4% of small hospital pharmacy departments reported sustainability initiatives embedded in their strategic plans.

- Despite limited formal planning, adoption of at least one environmental mitigation strategy was nearly universal (98% of large hospitals; 95% of small hospitals).
- Common actions included recycling (86% of large hospitals; 69% of small hospitals), reuse of returned drugs (86% in both groups), and tamper-tape on multi-dose products (79% and 70%, respectively).

However, initiatives requiring cross-disciplinary collaboration or designated leadership were rare. Only 17% of large hospital respondents and 1% of small hospital respondents reported a formal "Green Team," and just 24% of large hospitals and 2% of small hospitals had pharmacy staff with dedicated sustainability responsibilities. Reporting of sustainability metrics to senior leadership was uncommon (14% of large hospitals; 2% of small hospitals), limiting accountability and resourcing.

Disaster Preparedness

Climate-related disasters are placing increasing strain on healthcare systems, making pharmacy disaster preparedness essential to continuity of care.

- Pharmacy-specific disaster or extreme weather adaptation strategies were reported by 56% of large hospitals and 67% of small hospitals.
- Routine disaster training for pharmacy staff lagged behind planning, particularly in large hospitals, where only 31% reported regular training (vs 51% of small hospitals).
- More than half of large hospitals (52%) and 39% of small hospitals reported no routine disaster training.

Preparedness activities such as increasing inventory during disasters (54% of large hospitals; 64% of small hospitals) were more common than heat-specific medication plans (only 11% of large hospitals and 30% of small hospitals). These findings point to opportunities to strengthen operational readiness through staff training and scenario testing.

Artificial Intelligence and Cybersecurity

AI adoption in hospital pharmacy practice in Canada remains limited, but interest is growing as workforce pressures and automation needs increase.

- The majority of respondents reported no AI use (86% of large hospitals; 91% of small hospitals).
- Where AI was used, it was most commonly applied to administrative activities (8% of large hospitals; 5% of small hospitals), with minimal clinical or distributional use.

Cybersecurity preparedness showed moderate uptake but inconsistent testing.

- A cyberattack response plan was reported by 59% of large hospitals and 44% of small hospitals.
- Among those with plans, annual review or testing was reported by only 23% of large hospitals compared with 53% of small hospitals.
- Prior cyberattacks were reported by 14% of large hospitals and 4% of small hospitals, underscoring the higher exposure of larger, more complex sites.

Drug Shortage Mitigation

Drug shortage management is now a core function of hospital pharmacy practice.

- Foundational mitigation strategies were nearly universal, including inter-facility borrowing (100% of large hospitals; 99% of small hospitals), therapeutic substitution (96% and 97%), and format changes (93% and 92%) respectively.
- Resource-intensive strategies were more common in large hospitals, such as compounding (83% vs 66% in small hospitals) and increasing minimum inventory levels of essential medications (84% vs 81%).

More concerning strategies were also reported, including the use of less effective therapies (43% of large hospitals; 53% of small hospitals) and reductions in pharmacy services (17% and 24%, respectively), signaling areas of clinical and ethical tension when shortages intensify.

Alternative Methods of Providing Care: Limited Post-Pandemic Expansion

Despite rapid uptake of telehealth during the COVID-19 pandemic, sustained use remains limited.

- 53% of large hospitals and 78% of small hospitals reported never having used telehealth during the pandemic.
- Among those that adopted telehealth during the pandemic, 22% of large hospital respondents and 37% of small hospital respondents were no longer using it.
- Continued use focused primarily on patient assessment, education, monitoring, and follow-up, without any indication of more widespread adoption.

Key Points for Pharmacy Leaders

- Pharmacy is uniquely positioned to lead environmental sustainability, yet formal departmental planning, dedicated roles, and performance reporting remain limited.
- Disaster preparedness planning is common, but training gaps persist, particularly in larger institutions; regular exercises are essential for operational readiness.
- AI adoption is in its infancy, presenting a strategic opportunity for pharmacy leaders to shape safe, value-added implementation.
- Cybersecurity preparedness requires greater consistency, including regular testing of response and downtime plans.
- Drug shortage mitigation is highly developed, but the use of less effective therapies and pharmacy service reductions highlights growing system strain.
- Post-pandemic care models have largely reverted to traditional approaches, suggesting untapped potential for technology-enabled pharmacy services.

I - Small Hospital Survey

The Small Hospital Survey (SHS) was developed to address a longstanding gap in national data on pharmacy practice in Canadian hospitals with fewer than 50 acute care beds. Although small hospitals represent 50.5% (304/602) of Canadian hospitals, they account for just over 6% of the acute care beds, yet remain subject to the same regulatory, accreditation, and professional standards as larger facilities. The 2023/24 SHS continues a critical longitudinal effort to understand how pharmacy services are delivered in these settings and how they are evolving over time.

Hospital Demographics

- The 2023/24 SHS achieved a response rate of 70% (223/332), an increase from 59% in 2020/21, reflecting strong engagement across regions and the inclusion of Alberta for the first time.
- Respondents represented 8,837 total beds, including 4,613 acute care beds and 4,224 non-acute care beds, with averages of 20 acute care beds and 36 non-acute care beds per facility.

Small hospital occupancy has increased substantially since the 2020/21 survey.

- The average acute care occupancy rate rose to 74%, up 16 percentage points from 2020/21, with marked regional variation ranging from 57% in Québec to 104% in Atlantic Canada. Despite this increase, occupancy remains notably lower than in hospitals with 50–200 beds (93%).

Human Resources and Workforce Capacity

Across Canada, small hospitals reported reductions in average budgeted FTEs for pharmacists, pharmacy technicians, and pharmacy assistants compared with 2020/21.

- National averages in 2023/24 were 1.0 pharmacist FTE, 1.5 pharmacy technician FTEs, and 1.0 pharmacy assistant FTE per facility. Notable regional variation persists, including continued reliance on pharmacy assistants in Québec, where the pharmacy technician role was only beginning to be introduced at the time of the survey.
- Reported vacancy levels were relatively low, with mean vacancies of 0.2 FTE for both pharmacists and pharmacy technicians; however, these figures must be interpreted cautiously given variability in service models and the reliance on remote coverage.

Pharmacy Service and Practice Models

Pharmacy service delivery in small hospitals is highly variable.

- While 75% (173/232) of respondents reported having an on-site hospital pharmacy—up from 63% in 2020/21, 87% (201/232) reported using some form of off-site or remote service model at least part of the time.
- Moreover, 61% of respondents relied on more than one service model, reflecting hybrid and regionally coordinated approaches.
- The use of telepharmacy increased to 18% (42/232), compared with 11% in 2020/21, with particularly high use in Ontario.

- Most pharmacies were open 18–40 hours per week (58%), underscoring the ongoing need for remote pharmacist coverage to meet accreditation standards for medication order review outside regular hours.

Drug Distribution and Compounding Practices

Encouraging shifts toward safer medication systems was reported.

- The use of traditional or total wardstock distribution systems declined to 23% from 31% in 2020/21, while 48% of respondents reported using centralized unit-dose systems.
- On-site sterile compounding is increasingly uncommon. Eighty-six percent (200/232) of small hospitals reported no on-site non-hazardous sterile compounding, a significant reduction from the previous survey.
- Hazardous compounding practices were largely unchanged overall but declined in Atlantic Canada.
- These trends reflect the impact of NAPRA sterile compounding standards, workforce constraints, and increasing reliance on outsourced or centralized preparation models.

Technology

The use of medication-related technologies continues to expand.

- Smart pump technology was reported by 76% (174/230) of small hospital respondents, up from 2020/21.
- Adoption of barcoding during preparation in the pharmacy (44%) and dispensing (loading into ADCs) (45%) nearly doubled compared with the previous survey.
- Notably, small hospitals reported higher implementation rates of CPOE (39%) and bedside patient barcoding (40%) than hospitals with 50–200 beds (in the large hospital survey), driven largely by province-wide technology deployments. These findings indicate meaningful progress toward closed-loop medication systems in smaller facilities.

Pharmacist Practice Models and Clinical Pharmacy Key Performance Indicators (cpKPIs)

Consistent with workload distribution findings, 40% of respondents reported that pharmacists primarily performed distributive functions, suggesting ongoing opportunities to optimize skill mix and redeploy pharmacists toward direct patient care.

- Pharmacists' clinical activities remain evenly split between reactive (48%) and proactive (52%) care.
- The collection of clinical pharmacy key performance indicators (cpKPIs) increased to 49% (92/188) of facilities, up from 37% in 2020/21, with a notable increase in Saskatchewan/Manitoba and Atlantic Canada.
- Participation in practice-based research remained low at 6% (14/228), highlighting persistent barriers to scholarly activity in small and rural hospital settings.

Key Points for Pharmacy Leaders

- Participation is strong and growing: The 70% response rate confirms the relevance of the SHS and the importance of small hospitals in the national pharmacy landscape.
- Occupancy and demand are rising: Acute care occupancy increased to 74%, intensifying pressure on pharmacy services.
- Workforce capacity is tightening: Declines in average budgeted FTEs, paired with variable service models, emphasize the need for strategic workforce planning.
- Hybrid service models are now the norm: 87% of small hospitals rely on off-site or remote pharmacy services at least part of the time.
- Medication safety infrastructure is improving: reduced wardstock use, increased unit-dose systems, and expanded technology adoption support safer care.
- Clinical practice remains constrained by distribution workload. Many pharmacists continue to spend significant time on activities that could be delegated or automated.
- Performance measurement is advancing, research is not. Growth in cpKPI collection is encouraging, but practice based research remains rare and represents an opportunity for leadership investment.

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