Hospital Staffing and Hospital Harm Trends Throughout the COVID-19 Pandemic

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Abstract

Throughout the COVID-19 pandemic, delivery of care was exceedingly difficult for hospital healthcare teams. This analysis presents a high-level look at the available pan-Canadian data on hospital staffing – including sick time, overtime and agency use – and potential impacts on patient harm in acute care hospitals. In 2021–2022, nurses and other healthcare providers working in hospital in-patient units across Canada logged significantly more overtime and sick-time hours compared with the previous year, equating to a shortfall of almost 14,000 full-time positions. Concurrently, the pan-Canadian rate of unintentional hospital harm increased to 6% compared with pre-pandemic numbers. The Hospital Harm Improvement Resource (HEC 2023a) links harm measurement and improvement efforts by providing evidence-informed practices to support patient safety improvement efforts.

Introduction

The COVID-19 pandemic challenged hospital staff on many fronts:

- uncertainty surrounding COVID-19;
- challenges with personal protective equipment, including rationing and fatigue related to constant use and changing guidelines;
- working shifts with sub-optimal staffing levels;
- concerns for the health of loved ones (Tomblin Murphy et al. 2022);
- healthcare workers getting sick themselves or having to isolate; and
- an increased number of lost-time claims filed with workers' compensation boards (AWCBC 2024).

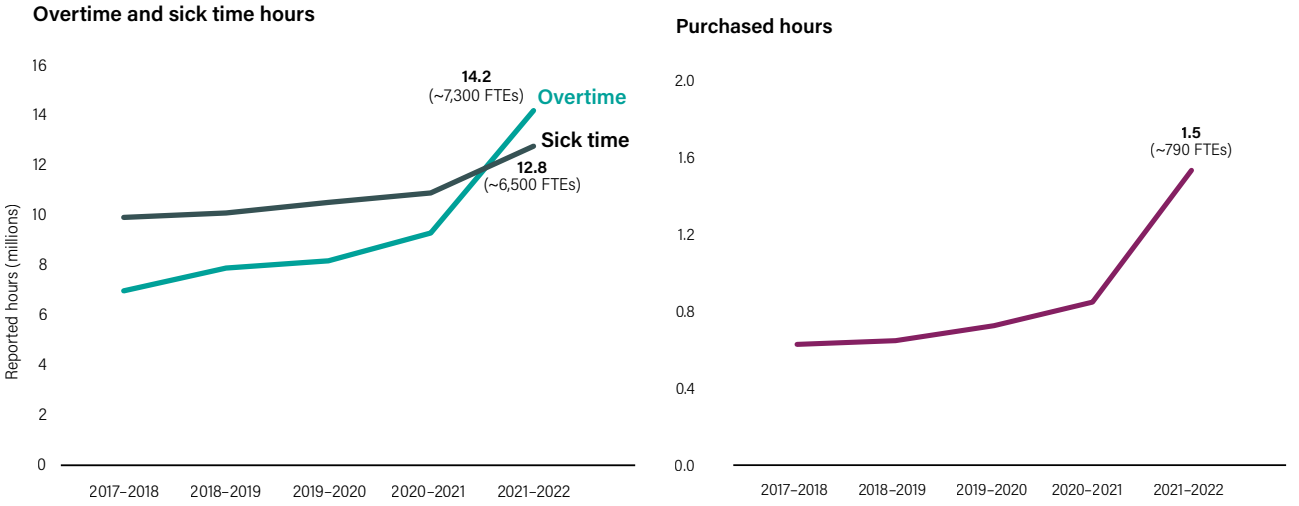
All of these factors made the delivery of care exceedingly difficult for healthcare teams during this time (Allin et al. 2022) – a period that also saw increases in preventable hospital harms in patients. To cope with the pandemic, many jurisdictions redeployed hospital health workers to other service areas (CIHI 2022a) and required staff to work overtime (CIHI 2022b). Some provinces and territories called on retired health workers to return to practice to meet demands and for relaxed and streamlined entry to practice and licence requirements for new physicians and nurses or health workers from other jurisdictions (CIHI 2022a). Care models were also adjusted to support healthcare workers working to their full scope of practice; nursing students were brought in for bedside support (Tomblin Murphy et al. 2022); and private agencies were sought to fill staffing gaps (CIHI 2022c).

Hospitals relied heavily on overtime and agency staff during the pandemic

Throughout the COVID-19 pandemic, delivery of care was exceedingly difficult for hospital healthcare teams. Hospitals were challenged immensely throughout the first year of the pandemic as seen by an uptick in sick-time, overtime and purchased hours in 2020–2021. However, in 2021–2022, nurses and other healthcare providers working in hospital in-patient units across Canada logged notably more sick-time and overtime hours compared with the previous year. There was a 17% increase in reported sick time from the previous year, with the total sick-time hours translating to a shortfall of about 6,500 calculated full-time equivalents (FTEs)[1] that year. More than 14 million overtime hours were logged for those units in 2021–2022, which was a 50% increase from the previous year and equates to about 7,300 calculated FTEs (Figure 1).

While hours purchased and worked by nurses and other healthcare providers from outside agencies made up only a small portion of the total volume of hours worked in hospital in-patient units (about 1%), there was an 80% increase in the volume of purchased hours, from 850,000 in 2020–2021 to over 1.5 million in 2021–2022 (Figure 1). Contracts with private agencies offer higher rates of pay and more flexibility in scheduling, which was commonly noted as desirable among nurses during the pandemic (Tomblin Murphy et al. 2022).

FIGURE 1.
Number of reported hospital in-patient service hours by non-physician in-patient unit staff in provinces/territories with available data, 2017–2018 to 2021–2022



The data for non-physician in-patient unit staff reflect activity of unit-producing personnel (UPP) in hospital in-patient units as reported to the Canadian Management Information System Database (CMDB) by ministries and departments of health.
The CMDB houses financial and statistical data from approximately 600 public hospitals and 2,000 non-hospital health service organizations and regional health authorities across Canada, except Quebec and Nunavut.
The variables and concepts used to capture information in the CMDB are based on the standards for Management Information Systems in Canadian health service organizations (CIHI 2015, 2018).
UPP captured in the in-patient services data primarily include nursing professionals (nurse practitioners and other advanced practice nurses, registered nurses, licensed practical nurses and registered psychiatric nurses); they also include (but are not limited to) occupational therapists, laboratory technologists, pharmacists, housekeepers and public health officers. They do not include medical personnel (i.e., physicians and residents), managers or administrative support personnel.
Full-time equivalents (FTEs) are calculated by taking the number of hours and dividing by 1,950 (1,957.5 in leap years), which is the assumed number of normal earned hours for one FTE in a given fiscal year (CIHI 2022c).
Overtime hours and *sick-time hours* include data from all submitting provinces and territories.
Purchased hours include data from all submitting provinces and territories except Prince Edward Island, Alberta and the Northwest Territories.
Source: CMDB, 2017–2018 to 2021–2022, Canadian Institute for Health Information.

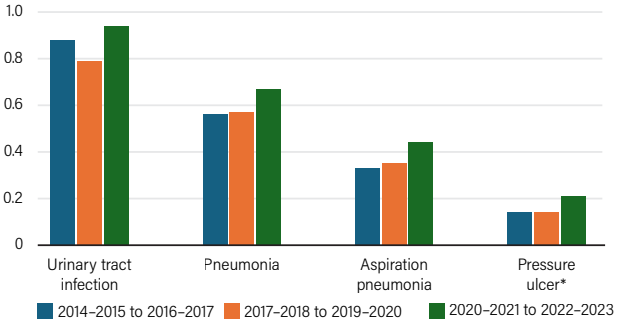
Hospital harm also trended upward during the pandemic years

The hospital harm measure reports the rate of hospitalizations with at least one of the 31 unintended occurrences of harm (CIHI 2022d) that could be potentially prevented by implementing known evidence-informed practices. Harm as a result of hospital care, treatment, medical procedures or in-hospital accidents is generally captured within the measure (CIHI 2022d).

Rates of harm to patients increased along with rates of staff absenteeism, overtime and use of agency staff. Across Canada, the rate of hospital harm increased to 5.9% in 2020–2021 and 6% in 2021–2022 and 2022–2023 after remaining stable between 5.3% and 5.4% since 2014 (Figure 2). In 2022–2023, one in 17 patients admitted to hospital was unintentionally harmed during their stay.

Urinary tract infections, pneumonia, aspiration pneumonia and pressure ulcers are examples of harms that may be linked to nurse staffing levels (Oner et al. 2021), though team-based models of care in hospitals mean that other healthcare providers also impact rates of harm in these areas. While these types of harms are considered rare events, the rate for each increased during the pandemic (compared with the pre-pandemic period).

FIGURE 2.
Average crude rate of harmful events in hospitals for selected clinical groups in Canada (excluding Quebec), 2014–2015 to 2022–2023



The rate is the number of hospitalizations where at least one harmful event occurred for selected harms per 100 relevant hospitalizations.
The data from Quebec and for some mental health patients have been excluded due to methodological issues.
*Interpret with caution. Improved data capture may account for some increases seen in rates of pressure ulcers in 2022–2023.
Source: Discharge Abstract Database, 2014–2015 to 2022–2023, Canadian Institute for Health Information.

The Canadian Institute for Health Information and Healthcare Excellence Canada have been collaborating on the Hospital Harm Project (CIHI 2023a) since 2011. The results of this partnership are an online tool – the improvement resource (HEC 2023a) – and a measure of hospital harm that is linked directly to the quality improvement resources (HEC 2023b). These are powerful, actionable tools that health system leaders can use to improve patient safety in acute care hospitals (HEC 2023b).

Conclusion

Harm prevention in hospitals requires awareness and action from personnel of all levels because harm is most often the result of a chain reaction – a failure of the system at multiple stages that makes it difficult to provide proper care (Baker et al. 2004). COVID-19 added new challenges for healthcare providers due to the changing care needs of more complex patients, along with uncertainty and evolving guidance around the clinical management of patients. Frequent staffing changes that disrupted the continuity of care or reduced time with patients may also have contributed to these observed trends.

This analysis raises a number of questions that warrant further analysis on how to support a robust health workforce now and in the future, including outside hospitals, which are essential and should be explored. In addition, examination of these trends at the provincial/territorial, regional and facility levels continually over time will allow for evidence-based decisions by local health system leaders and the consideration of relevant factors, including workforce capacity, facility size and population needs.

Informed planning and strategies to optimize and support a robust health workforce are needed across the country. Strategies may include:

- offering greater flexibility for work-life balance;
- providing mental health supports;
- recruiting to maintain full staffing and then supporting to retain staff; and
- ensuring that every team has the right mix of providers and that members are supported to work to their full scope of practice.

Data-driven analysis of these strategies will be key to improving the overall quality of employment as well as patient care and safety. HQ

Related Resources

Learn more about:

- hospital spending in Canada (CIHI 2023b);
- selected hospital staffing indicators (CIHI 2022c); and
- the Hospital Harm Project (CIHI 2023a).

Note

[1] Full-time equivalents (FTEs) are calculated by taking the number of hours and dividing by 1,950 (1,957.5 in leap years), which is the assumed number of normal earned hours for one FTE in a given fiscal year.

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