CRITICAL CARE WORKFORCE PROFILE

JULY 2019 PROVINCIAL REPORT

Critical Care Services Ontario

CCSO Critical Care Services Ontario

Acknowledgments

The 2019 Critical Care Workforce Profile (CCWP) reflects data generated between April 1, 2017, to March 31, 2018. Critical Care Services Ontario (CCSO) would like to thank all Critical Care Partners who have been instrumental in contributing data to complete the 2017/18 Critical Care Workforce Profile Survey. These contributions are vital to understanding the current state for some health disciplines providing care for critical care patients. It also informs CCSO's efforts in working with providers and health system leaders on health human resource planning and work in identifying emerging challenges and considerations for the critical care workforce.

Public Information

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A Message from Dr. Bernard Lawless and Mrs. Linda Kostrzewa

Critical Care Services Ontario (CCSO) is proud to release the 7th edition of survey results in the 2019 Critical Care Workforce Profile Report based on data from the 2017-18 fiscal year. Health Human Resource (HHR) planning is an integral part of CCSO's People Strength goal in its 2018-2021 Strategic Plan. Understanding the critical care workforce through comprehensive data increases forecasting accuracy, informs effective staffing practices, and can enhance retention and recruitment strategies to ensure resilient critical care Health Human Resources for the province to meet current and future system needs.

In 2007, CCSO developed the original Critical Care Nursing Workforce Profile (CCWNP), created to focus research on critical care nurse staffing in Ontario. This survey was conducted annually until 2011, and biannually thereafter. The scope of the survey was expanded in 2015/16 to include Allied Health Professionals working in critical care units. In the fall of 2018, CCSO's mandate expanded to encompass Neonatal Intensive Care Units (NICUs) in Ontario. The 7th edition of CCWP reflects this increased scope, which now includes all nurses and allied health professionals working in adult, paediatric, and neonatal critical care units in the province.

On behalf of CCSO, we extend sincere thanks and gratitude to all those who have continued to participate in the CCWP survey, year-on-year, without which such robust intelligence could not be produced in return. Finally, we wish to thank those who have thoughtfully contributed to the development over the years and particularly to the 7th edition of the CCWP. We hope our system collaborators will continue to find value in the analysis and presentation of information to help inform an adaptive and resilient critical care system.

Sincerely,

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Critical Care Services Ontario

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Executive Summary

The 2019 Critical Care Workforce Profile Provincial Report provides analytics on the critical care nursing workforce and to a lesser degree on allied health professionals working in the Ontario Critical Care System. The report includes comprehensive critical care nurse demographics, workforce utilization, and recruitment and retention indicators with data from the 2017/18 year. Where available, indicators have been trended over time from 2007/08 or from when data was first available, as the survey has undergone iterative changes over the years.

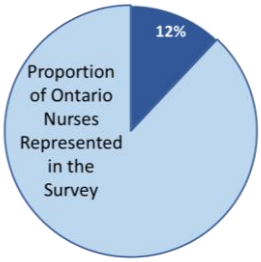
The survey results are presented in two parts:

1. The Provincial Report, which provides both aggregate provincial analysis by unit type (adult, neonates, and paediatric), as well as some further detail by the level of care (e.g. Level 2 units and Level 3 units) and regional analysis (LHIN level) for select indicators.
2. In addition, 15 Peer Group–level reports are available to hospitals, presenting findings that are unique to Peer Groups and across the individual critical care units for the Peer Group.

The executive summary below provides a highlight of the provincial findings.

Critical Care Representation

New to the 2017/18 CCWP Survey was the inclusion of 53 neonatal intensive care units. In total, the survey responses include information for more than 11,400 nurses, representing 12% of all Registered Nurses employed in Ontario in 2017. From the responses received across 218 critical care unit types (89% response rate), adult critical care nurses make up approximately 75% of all critical care nurses reported in the survey, 20% were neonatal critical care nurses and 5% of critical care nurses included in the survey analysis worked within paediatric critical care units in Ontario.

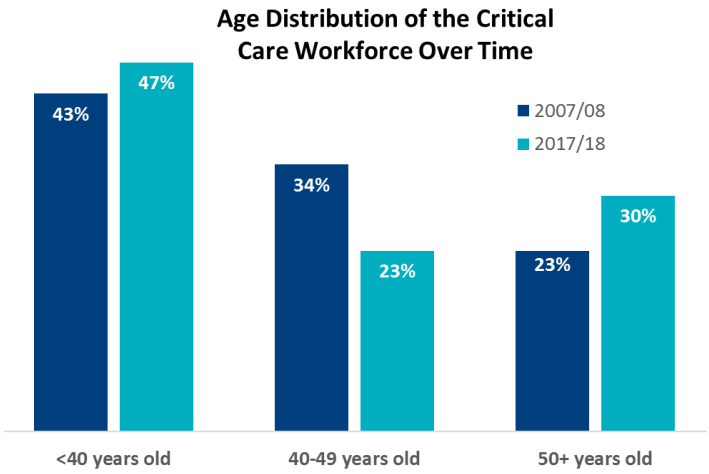


Nurse Demographics

This section of the report covers age and experience in critical care. Information on nursing roles and gender can be found in the body of the report.

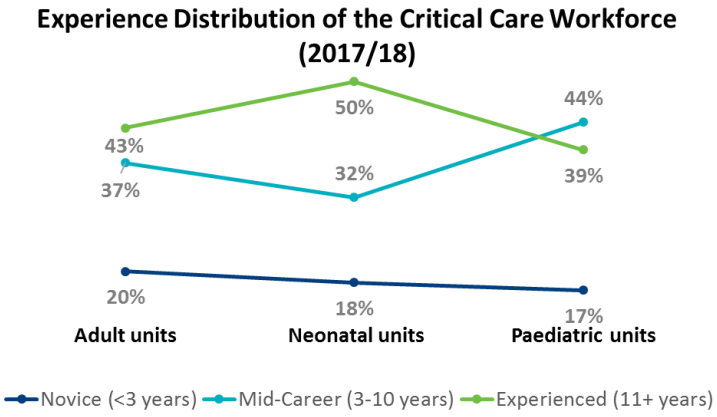
Age of the Nursing Workforce

Over the last ten years, there has been a steady decrease in the proportion of nurses aged 40-49. This has occurred with some increase in younger nurses (mostly those under the age of 30) and older nurses (mostly those aged 50 to 64).



- The presence of younger nurses (those under 40) is more common in paedicatric units and the presence of those nurses over 50 is more pronounced in neonatal units.
- Geographically, the distribution of younger nurses (those under age 40) is less prevalent in the Greater Toronto Area (LHINs 5 (Central West), 6 (Mississauga Halton), 7 (Toronto Central), 8 (Central), 9 (Central East)) and in LHIN 12 (North Simcoe Muskoka).

Nurse Experience in Critical Care



Within Ontario, there are differences in the distribution of experience levels in critical care units for adult units, neonatal units, and paediatric units. Neonatal units are unique with 50% of the nurses being highly experienced with 11 or more years of experience. Paediatric units have the largest proportion of mid-career nurses with 44% of staff on the units with between three and ten years of experience.

Nurse Staffing Practices

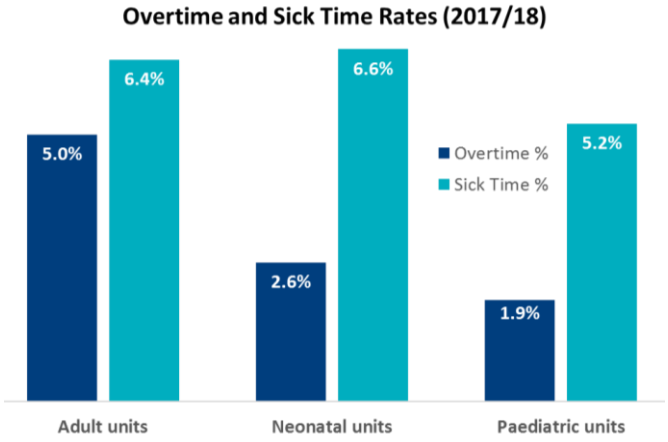
This section covers employment status, overtime, and sick time as well as nurse productivity. All other information on education time and managing short-term nursing shortages can be found in the related section in the body of the report.

Employment Status of Nurses

In 2017/18, 63.3% of Ontario's critical care nurses were employed full-time. Adult units had the highest proportion of full-time staff (66.2%) while neonatal units had the lowest proportion (50.8%). There were also significant regional differences. LHINs 4 (Hamilton Niagara Haldimand Brant) and 7 (Toronto Central) had about two-thirds of their unit nursing staff as full-time employees (67% each) while LHIN 12 (North Simcoe Muskoka {had less than half of their unit nursing staff as full-time employees (47%}).

Overtime and Sick Time for Nursing

Sick rates are highest in adult critical care units, while overtime rates are equally high for adult and neonatal units. Paediatric units have the lowest sick and overtime rates. Across the province, there are differences in overtime rates with LHIN 1 (Erie St. Clair) having sick and overtime rates higher than the provincial average while LHIN 2 (South West) has both sick and overtime rates lower than the provincial average.

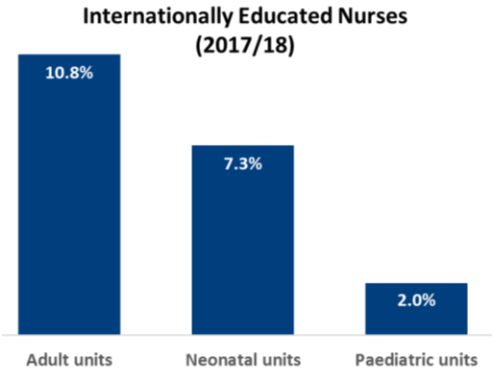


Nurse Productivity

One way to view nursing productivity, or the resource intensity of care, is to consider the number of nursing hours worked per patient day. Worked hours per patient day varies across unit types and levels of care, as patient needs and care demands differ. Paediatric units, on average, have 25.5 worked hours per patient day, reflecting the complex care needs of the paediatric patient population. At the lower end of patient acuity, Level 2 units for both adults and neonates have on average 10 worked hours per patient day. Results from the 2017/18 CCWP survey were similar to those reported in 2015/16.

Nurse Training

This section covers internationally educated nurses and specialized critical care training. All other information on educational attainment, life support training, and professional development investments can be found in the related section in the body of the report.



Internationally Educated Nurses

The proportion of nurses with international training has increased since the last survey from 7.4% to 9.6% of nurses in critical care units. By unit type, adult units have the largest proportion of internationally trained nurses, representing 10.8% of the nursing workforce. Neonatal units have a lower proportion with 7.3% and paediatrics has the lowest concentration of internationally trained nurses with 2% of the nursing workforce.

Specialized Critical Care Training

The Ontario Critical Care Nurse Training Standards recommend training completed through an in-house and/or college-based adult or paediatric critical care program that is at a minimum of 300 didactic and clinical training hours for nurses new to critical care. Neonatal critical care nurses were not asked to report on their training attainment, as work is currently underway to describe training standards for neonatal care environments as has previously been done for adult and paediatrics.

In 2017/18, provincially 68% of adult and paediatric critical care nurses had over 300 hours of critical care training. The paediatric critical care units at 83% reported the highest percentage of nurses meeting the 300-hour threshold, while adult Level 2 units had 40% of nursing staff trained to this threshold.

Nurse Turnover, Recruitment, and Retention

This section covers nurse employee turnover, vacancy rates, and recruitment strategies. Information on nurse exit destinations, changes in employment status and retention strategies can be found in the related section in the body of the report.

Employee Turnover

The overall turnover rate for nurses leaving critical care units provincially was around 10% for both adult and neonatal units, with a lower turnover rate of 6.4% reported for paediatric units. The tenure of nursing staff leaving their employment indicated that those who stayed less than 3 years with an employer are the largest group exiting from age categories including under 30 years old, 30 to 39 as well as the 40 to 49 age group. Thus suggesting a need to focus on employee retention for those new to the organization, across all age groups.

Vacancy Rate

As of March 31, 2018, the provincial vacancy rate for nurses in critical care units is 5.4%. This rate was highest in adult units (5.8%) and lowest in paediatric units (0.9%). There were regional differences as well, with some of the LHINs having higher vacancy rates {LHINs 3 (Waterloo Wellington), 5 (Central West), and 6 (Mississauga Halton)) while LHINs 2 (South West), 10 (South East), and 14 (North West)} had the lowest vacancy rates.

Recruitment Strategies

When recruiting new staff to work in critical care, the most common recruitment strategy was recruiting internally from other units in the hospital. This strategy was used by more than half of units (54%) across the province and found to be effective by 70% of units. Neonatal units rely on this strategy less with only 24% of units frequently using this strategy and are found to be effective by about a third of units.

Allied Health Professionals in Critical Care

This section of the report covers allied health professionals and reports on the use of 8 different professional groups. More than 85% of units in the survey regularly use the following allied health professionals within their units: pharmacists (94.5% of units), dietitians / clinical nutritionists (89% of units), respiratory therapists (88.5% of units), and social workers (87.6% of units).

Across these 4 groups, hours of coverage on weekdays and weekend is similar for pharmacists and respiratory therapists however for dietitians / clinical nutritionists and social workers the hours of coverage on weekends is less than during the week. The proportion of beds covered per FTE of allied health support was also analyzed. In all cases, professionals in Level 2 neonatal units had the largest number of beds to support per FTE, consistently around 30 beds per FTE for each discipline.

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1. Introduction

In Ontario and globally healthcare continues to face increasing demand pressures from both population growth and shifting demographics. Statistics Canada's population estimate in 2018 indicates that Ontario's population has increased by over half a million residents (5%). Since 2014, with the province's metropolitan centers, such as Toronto, Hamilton, Kitchener-Waterloo and London having absorbed the bulk of these increases ("Estimates of population by census metropolitan area, sex and age group. ," 2018) More importantly however, the proportion of Ontarians 50 years and older has increased by 9% during the same time frame which is particularly relevant when planning for critical care as those 65 and older access critical care at a much higher rate than other age groups (CCSO analysis).

This Critical Care Workforce Profile (CCWP) is undertaken in support of the People Strength pillar of the Ontario Critical Care Plan, 2018-2021. This pillar of the Ontario Critical Care Plan has a goal *to lead a future-ready people strategy to deepen skills in collaborative change management and team-based care.* This report provides a summary of some key characteristics of the workforce in critical care, as an enabler to effective human resource planning and to capture any shifts in the composition of the workforce, which may present sustainability risks for the system. While there has been jurisdictional data collected broadly on nursing and other professional groups, there has been relatively scarce data available to reflect upon the precise challenges and demand on a workforce in specialty services such as critical care, outside of this work undertaken by Critical Care Services Ontario.

The 2019 Critical Care Workforce Profile Report is the 7th edition of a provincial survey looking into the demographics, staffing practices, and supports to critical care nursing and allied health professionals in Ontario, across its 246 adult, paediatric and neonatal critical care units. As CCSO's mandate has been expanded to oversee the neonatal intensive care units in October 2017, new to the 7th edition of the Critical Care Workforce Profile is reporting on neonatal intensive care workforce in the province.

1.1 Objectives and Scope of the Critical Care Workforce Profile

The CCWP Provincial Report aims to provide critical care service providers, the Ministry of Health and Long-Term Care (MOHLTC) and other critical care stakeholders insights into the availability, utilization and adequacy of critical care health human resources (HHR) at aggregate provincial, unit type level (adult, paediatric and neonatal units), and some regional views to enable resilient critical care workforce planning which meets current and future system needs.

Comprehensive workforce data increases forecasting accuracy, informs effective and efficient staffing practices, identifies and strengthens useful retention strategies and ensures workforce continuity. Up-to-date information about demographics, staffing practices, turnover, recruitment and retirement, workplace stressors, and professional development trends of the critical care workforce is essential for informing these efforts. Thus, the CCWP aims to:

- Track and trend demographics of the nursing workforce to identify emerging trends and pressures across the province;
- Understand the existing resourcing of the critical care nursing and allied health professional workforce in depth including review of nurse staffing practices such as full-time staff mix, overtime rates, vacancy rates, and more;
- Understand the training and development practices for the critical care nursing workforce;
- Assess recruitment and retention through staff departure rates and the number of new hires;
- Assess retention and recruitment challenges at the provincial and unit type level; track the impact of initiatives designed to improve retention and facilitate recruitment.

1.2 Data Collection Methods

The CCWP collects data from three sources: an online survey to unit managers as well as standardized data reporting from hospital Human Resource (HR) departments and Finance departments for relevant critical care units at their sites. A summary of the data elements and data sources is represented in Table 1 below**.**

Table 1: Data Elements Captured in the CCWP Survey

Subject Area	Focus of Questions	2015/16 and 2017/18		
		Unit Managers	Human Resources	Finance
Nursing Roles and Demographics	Number of staff by discipline	√		√
	Length of time on the unit	√		
	Number of staff by age group and gender		√	
Nurse Staffing Practices	Staff by employment status		√	√
	Staffing statistics (worked hours, overtime hours, sick hours etc.)			√
	Strategies for short-term nursing coverage	√		
	Worked hours per patient day			√
Nurse Training	Highest level of education; proportion of internationally educated nurses	√		
	Type of training (critical care certificates, ACLS, paid education hours etc.)	√		
	Support strategies for nursing professional development	√		
Nursing Turnover	Number of exits	√	√	√
	Reasons for exits (where known)	√		
Nursing Recruitment and Retention	Recruitment strategies	√		
	New Hires	√		√
	Vacancies	√		
	Retention strategies	√		

Subject Area	Focus of Questions	2015/16 and 2017/18		
		Unit Managers	Human Resources	Finance
Allied Health Professionals (AHP)	Allied health disciplines involved in regular care	√		
	Approximate FTE allocations of AHP by discipline	√		
	Coverage for weekdays, weekends, and call for AHP	√		

1.3 Structure of Report and Analysis

The 2019 CCWP Provincial Report provides workforce profiling of critical care nurses including some trending analysis where possible from previous iterations of the CCWP. In 2015/16, the CCWP went on to collect data for allied health professionals. Data for the most recent time period is for April 1, 2017 to March 31, 2018. Each section will present the provincial trending analysis where possible, as well as aggregate Ontario results compared with results for adult, paediatric and neonatal units.

1.4 Report Considerations

Although data for the 2017/18 CCWP survey was requested from existing hospital systems (for finance and human resources data requests), the completeness of data reported will vary across different dimensions of analysis.

When reviewing the report and analysis, the reader should be aware of the following considerations:

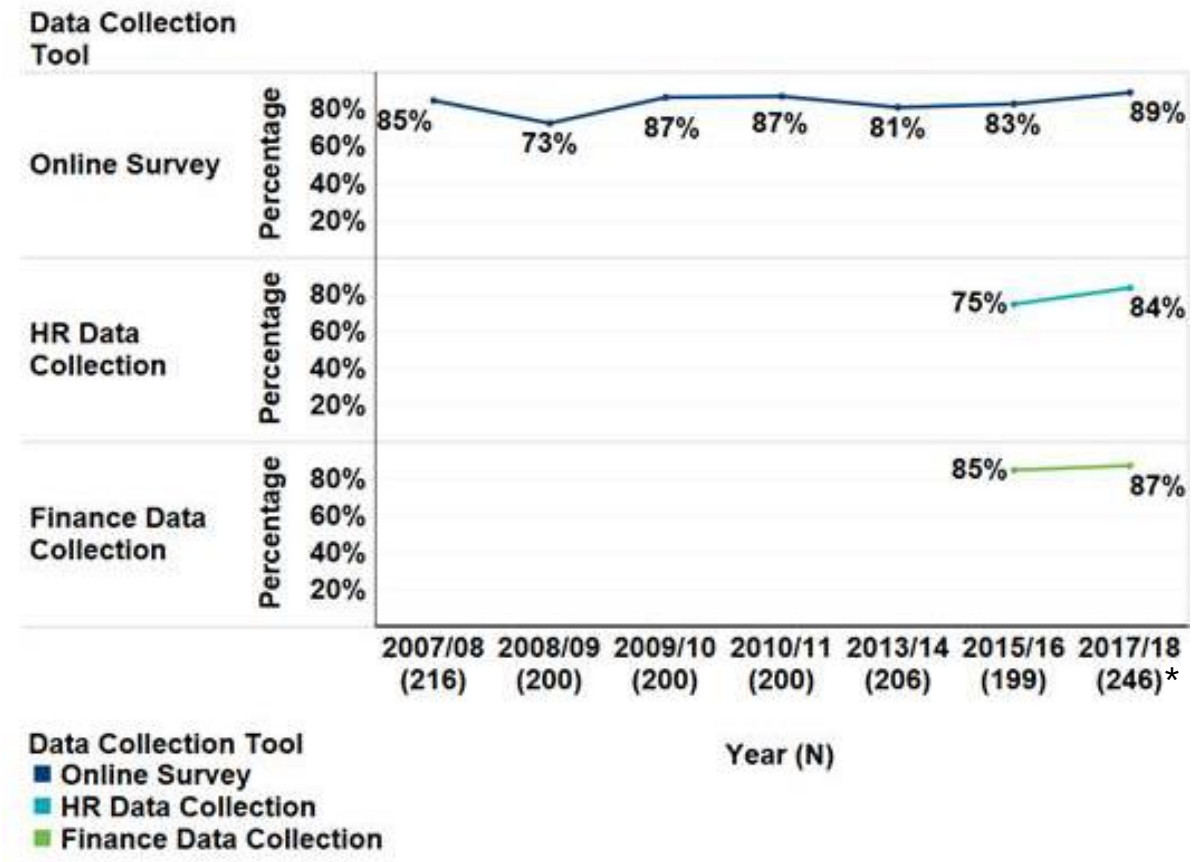
- Analysis may be at the staff-level or unit-level, depending on the focus of the indicator.
- In figures and tables throughout the report, "N" denotes the provincial sum of respondents (nurses or units) that are represented in the indicator
- Not all units that responded to the 2017/18 CCWP Survey completed all three data collection tools. For this reason, the number of units included in analysis may differ depending upon the data source.
- "N", or the provincial sum of respondents, may be different across indicators, as the same number of units may not have responded to each question. Percentages are therefore calculated from the number of responses to each question.
- The calculations for different analyses presented in figures and tables throughout the report can be found in Appendix B.

2. Survey Response Rate

CCSO has been tracking and profiling the critical care nursing workforce since 2007. In the summer of 2018, CCSO disseminated the Critical Care Workforce Profile Survey to Chief Nursing Officers, Vice Presidents responsible for ICU, ICU Directors, and ICU Nurse Managers with detailed instructions as well as an invitation to CCSO-led webinars to assist with data collection requirements and survey completion.

The CCWP Survey has had consistently successful response rates since 2007, collecting data from the majority of Ontario's critical care units. New to this year's data collection was the addition of all Ontario neonatal intensive care units. Since 2007, survey response rates have ranged from 73% to 89% as identified in Figure 1 with this iteration of the survey garnering the highest response rate to date. In the 2017/18 data collection process, response rates varied between 84% and 89% from the three data collection tools, with the human resource data collection tool having the lowest response rate from critical care units at 84% compliance (206 out of a total 246 Ontario critical care units).

Figure 1: CCWP Data Collection Tool Response Rate, Trend Over Time



* NICUs were added to the data collection process in 2017/18
N = Number of units

Table 2 offers a snapshot of the response rates from the three data collection tools by unit type, where response rates ranged from 38% to 89%. Adult units had a consistently high response rate at 89% on all data collection tools. Neonatal critical care units had a lower response rate on the human resource and finance data collection tools at 74% and 83% respectively as compared to 89% for the online data collection tool. Survey responses by paediatric critical care units demonstrated the biggest range with 88% compliance in finance submissions but less than half of units (38%) responding for human resource submissions.

Table 2: CCWP Response Rate, by Unit Type

Unit Type	Total # of Critical Care Units	Number of Critical Care Units Responded			Response Rate		
		Online Survey Submission	Human Resources Submission	Finance Submission	Online Survey Submission	Human Resources Submission	Finance Submission
Ontario	246	218	206	215	89%	84%	87%
Adult	185	165	164	164	89%	89%	89%
Neonatal	53	47	39	44	89%	74%	83%
Paediatrics	8	6	3	7	75%	38%	88%

2.1 Number of Nurses Represented in the CCWP

Of the three data collection tools used, the online survey submissions provided information on the highest absolute numbers of critical care nurses. The information requested on number of nurses was omitted for a number of units in the finance data collection tool, which led to this result. The number of nurses represented in each of the data collection tool submissions is identified in Table 3 below. This information is also provided by Local Health Integration Network (LHIN) to represent the distribution of critical care nurses across the province in Appendix A.

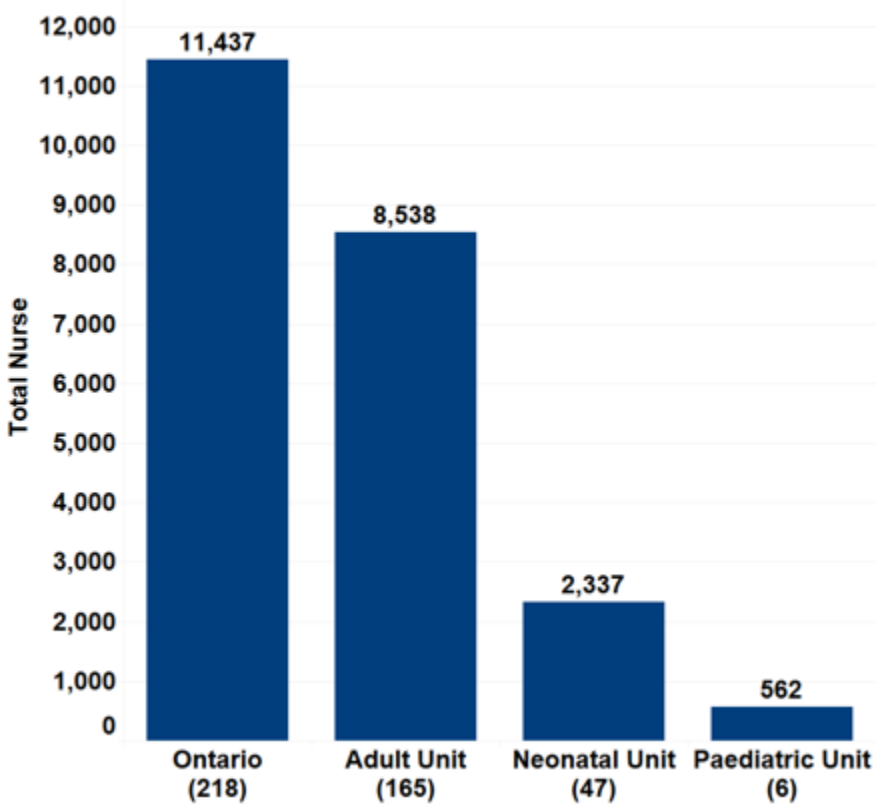
Table 3: Critical Care Nurses Reported in Data Collection Tools, by Unit Type

	Total Number of Units Providing Headcount Data			Total Number of Critical Care Nurses (Headcount) Represented: Ontario		
	Online Data Submission	Human Resources Submission	Finance Submission	Online Data Submission	Human Resources Submission	Finance Submission
Adult	165	164	164	8,538	8,109	7,420
Neonatal	47	39	44	2,337	1,756	1,997
Paediatric	6	3	7	562	262	548

The online survey responses, submitted by 89% of Ontario's critical care units, collected information on 11,437 registered critical care nurses. There were a the total 95,350 Registered Nurses (RNs) working in nursing in Ontario in 2017, which indicates the findings of the CCWP survey represent about 12.0% of all Registered Nurses employed in Ontario in 2017 ("College of Nurses of Ontario, Membership Statistics Highlights. ," 2015)

Figure 2 shows the total number of critical care nurses reported by the online survey data collection tool by unit type. Adult critical care nurses make up approximately 75% of all critical care nurses reported in the survey, 20% are neonatal critical care nurses and 5% of critical care nurses work within paediatric critical care units in Ontario.

Figure 2: Critical Care Bedside Nurses, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 5
N = Number of units.

3. Nurse Roles and Demographics

The nursing roles are presented in adult, paediatric and neonatal critical care units and the demographic characteristics of Ontario's current critical care nursing workforce. A view of current demographics offers insight into the current and potential demands for training and recruitment in critical care (Kabene, Orchard, Howard, Soriano, & Leduc, 2006). A clear understanding of these factors guides effective planning, utilization, and management of the critical care nursing workforce. In addition, this data provides important contextual insights to inform recruitment and retention of the critical care nursing workforce.

3.1 Nursing Roles

Just under 90% of nurses working in adult critical care units are working in a "Registered Nurse" role as submitted by nurse managers in the online survey data collection tool. "Registered Nurse" was also the most common role type as submitted by paediatric critical care units (81.9%) and neonatal units (85.1%). The role of "Nurse Practitioner" appears highest among the Neonatal units at 3.5% (See Table 4). All other nursing roles seem somewhat consistently represented among all adult, paediatric and neonatal critical care units.

Table 4: Headcount by Nursing Role Type, by Unit Type

Nursing Role	Adult (N= 165 units)		Neonatal (N= 47 units)		Paediatrics (N= 6 units)	
	Number	Percent	Number	Percent	Number	Percent
Registered Nurse	5,851	89.8%	1,316	85.1%	363	81.9%
Permanent Charge / Nurse without Assignment	176	2.7%	37	2.4%	24	5.4%
Critical Care Response Team (CCRT)	164	2.5%	0	0%	35	7.9%
Nurse Manager	113	1.7%	33	2.2%	6	1.2%
Nurse Educator	86	1.3%	30	1.9%	6	1.2%
Registered Practical Nurse	45	0.7%	1	0.0%	0	0.0%
Other Nurse	42	0.6%	15	1.0%	5	1.0%
Nurse Practitioner	25	0.4%	54	3.5%	4	0.9%
Clinical Nurse Specialist	12	0.2%	3	0.2%	2	0.5%
NICU patient transport team			56	3.6%		
TOTAL	**6,514**		**1,546**		**443**	

Source: 2017/18 CCWP Online Data Collection Tool, Question 3 and 4

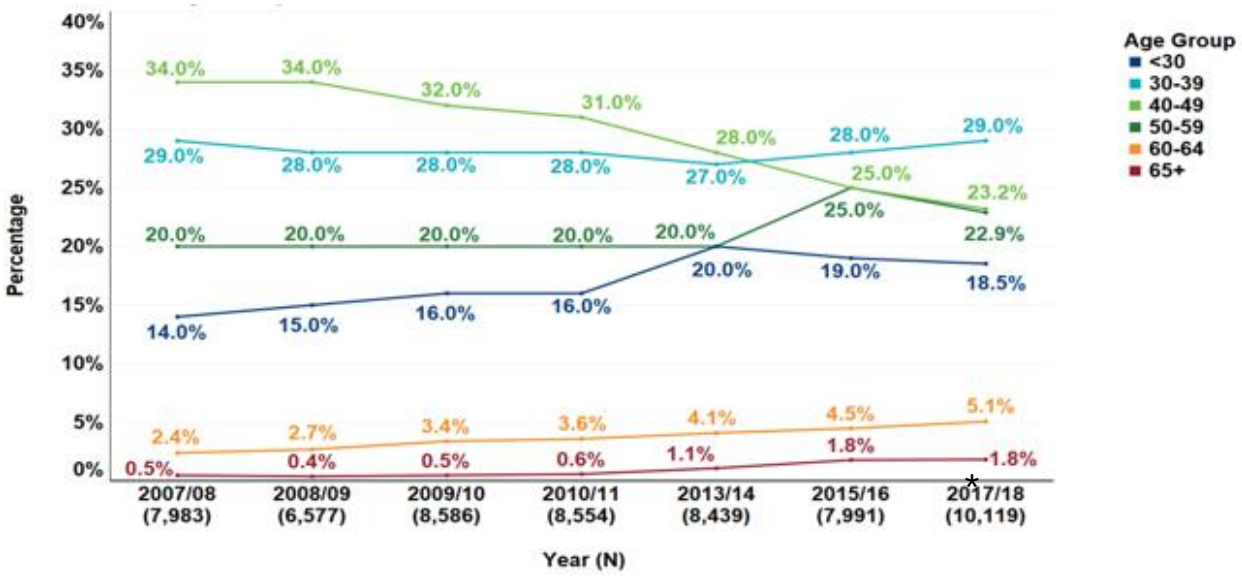
3.2 Age Groups

As shown in Figure 3, individuals between the ages of 30 to 39 represent the largest age cohort in the province for critical care nurses in 2017/18, with close to 30% of critical care nurses in this age range. Looking back, in 2007, the cohort of those aged 40 to 49 represented the largest age segment of the critical care workforce with 34% of Ontario's critical care nurses in this age range. Over the last ten years, there has been a steady decrease among this age group, with 23% of the nursing workforce in the 40-49 age cohort for 2017/18. While NICU nurses were included in this year's age group distribution results, the addition of this group does not influence the directional trend.

The data collected between 2007 and 2017/18, shows the following changes in the age distribution of the critical care nursing workforce:

- There has been a 5% increase in the proportion of nurses aged 30 and younger.
- The proportion of nurses aged 30 to 39 has remained relatively stable around 28% to 29%.
- There has been a continuing decrease in the proportion of nurses aged 40 to 49, with a reduction of 11% in the last decade.
- There has been an increase of 3% in the proportion of nurses aged 50 to 59.
- There has been an increase of 4% in those 60 and over, this has more than doubled the size of this group.

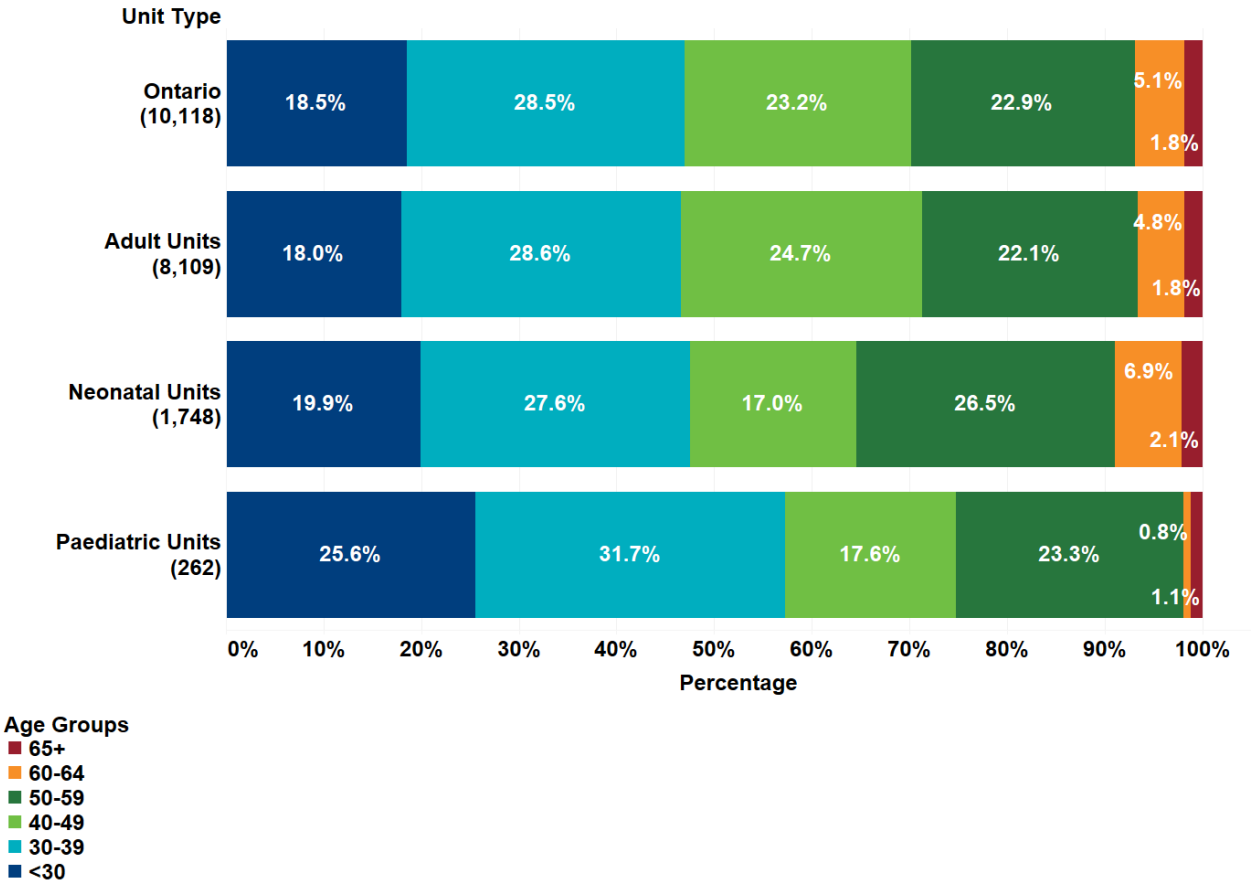
Figure 3: Age Group Distribution of Critical Care Nurses, Trend Over Time



*NICU nurses were added in the total this year while the number of these nurses do not impact the direction trend of results.
Source for 2017/18 CCWP Human Resource Data Collection Tool, Direct Care Nursing
N = Number of nurses

Figure 4 shows the percentage breakdown of critical care nurses by age and unit type. This graph shows that the median age of critical care nurses in Ontario is between 30 and 39 years. However, paediatric units have the youngest nursing demographic, where 57% of the nurses are under the age of 40. In contrast, neonatal units have reported the highest percentage of nurses over the age of 50 with 35.5%.

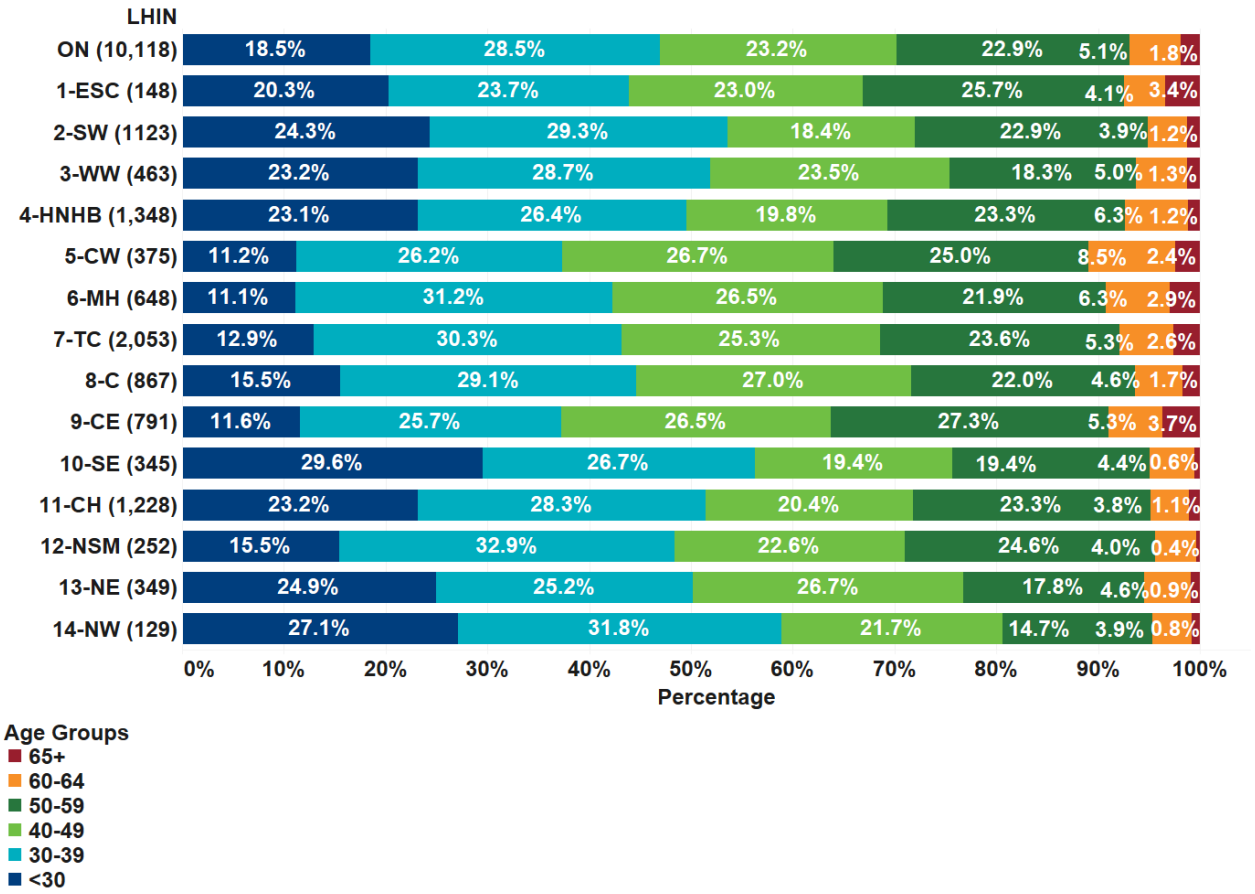
Figure 4: Age Group Distribution of Critical Care Nurses, by Unit Type



Source: 2017/18 CCWP Human Resource Data Collection Tool, Direct Care Nursing
N = Number of nurses

Figure 5 provides the age distribution of the critical care workforce by Ontario LHINs and highlights the age distribution of the workforce across Ontario. The Greater Toronto Area LHINs (Central West (LHIN 5) Mississauga Halton (LHIN 6), Toronto Central (LHIN 7), Central (LHIN 8), Central East (LHIN 9), and North Simcoe Muskoka (LHIN 12)) have the smallest proportion of nurses under the age of 30 with less than 16% in each LHIN. The Central West LHIN also has more than 10% of its reported nursing workforce that is age 60 or older.

Figure 5: Age Group Distribution of Critical Care Nurses, by LHIN



Source: 2017/18 CCWP Human Resource Data Collection Tool, Direct Care Nursing
N = Number of nurses

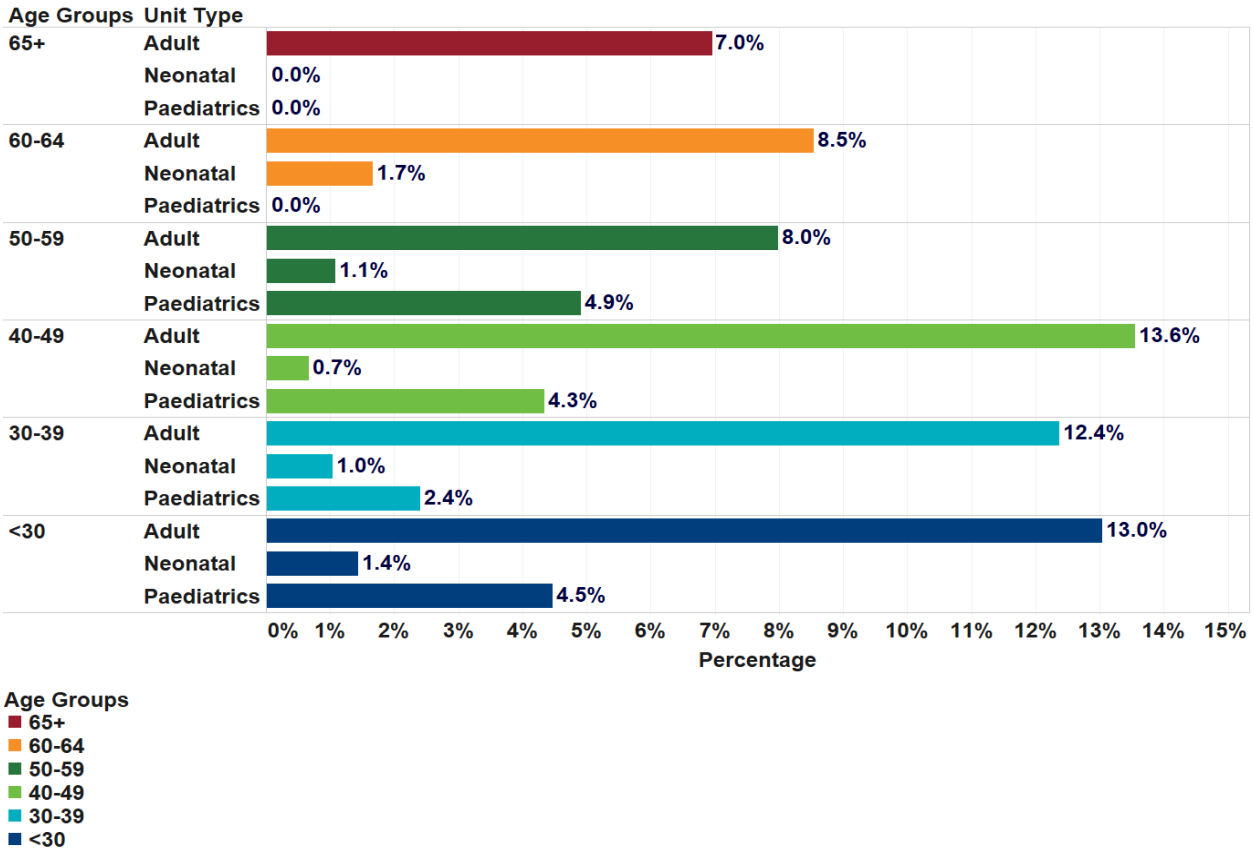
3.3 Gender

In 2017, males represented 8.2% of nurses employed in nursing in Ontario ("Workforce profile of Registered Nurses in Canada," 2011). An even smaller proportion of male nurses are found in rural compared to urban Ontario communities (Paterson J, 2014). The small number of male Registered Nurses in the nursing workforce highlights the opportunity for more targeted recruitment strategies to attract males to the profession ("Registered Nurses' Association of Ontario," 2010) (Twomey, 2008). One of the most significant barriers identified as an obstacle for men entering the nursing workforce is the perception of nursing as a female-dominated role, due to the nature of the work focusing on caring, compassion, and nurturance (Twomey, 2008).

The CCWP results indicate that males make up 9.5% of the critical care nursing workforce in Ontario. The adult critical care units reported the largest proportion of male RNs with 11.5%, while paediatric units reported the proportion of male RNs at 3.8%. Neonatal units reported the lowest portion of male RNs with just over 1%.

As shown in Figure 6, male critical care nurses aged 40 to 49 working in adult units make up the highest proportion of men working in critical care. This relative distribution is continued for the age groups under age 40 as well in adult critical care. The percentage of males regardless of age remains very low in both the paediatric and neonatal units.

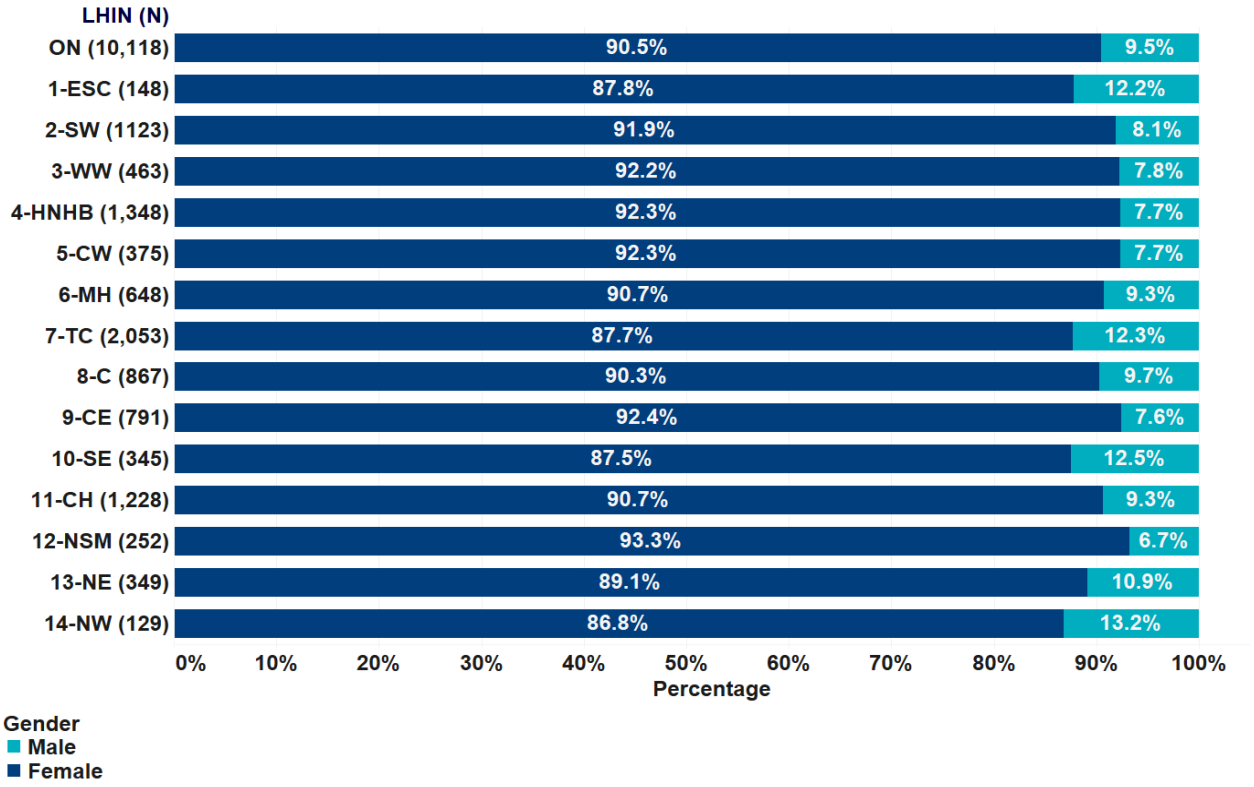
Figure 6: Age Group Distribution of Male Critical Care Nurses by Unit Type



Source: 2017/18 CCWP Human Resource Data Collection Tool, Direct Care Nursing

Figure 7 represents the percentage of critical care male nurses by Ontario LHIN. LHINs with less than 8% of men in their critical care nursing workforce included South West (LHIN 2), Hamilton Niagara Haldimand Brant (LHIN 4), Central West (LHIN 5), Central East (LHIN 9), and North Simcoe Muskoka (LHIN 12). Areas of the province with higher proportions of male nurses in critical care included Erie St. Clair (LHIN 1), Toronto Central (LHIN 7), South East (LHIN 10, and North West (LHIN 14), all with more than 12% of their workforce comprised of men.

Figure 7: Gender of Critical Care Nurses, by LHIN



Source: 2017/18 CCWP Human Resource Data Collection Tool, Direct Care Nursing
N= Number of nurses

3.4 Level of Experience in Critical Care

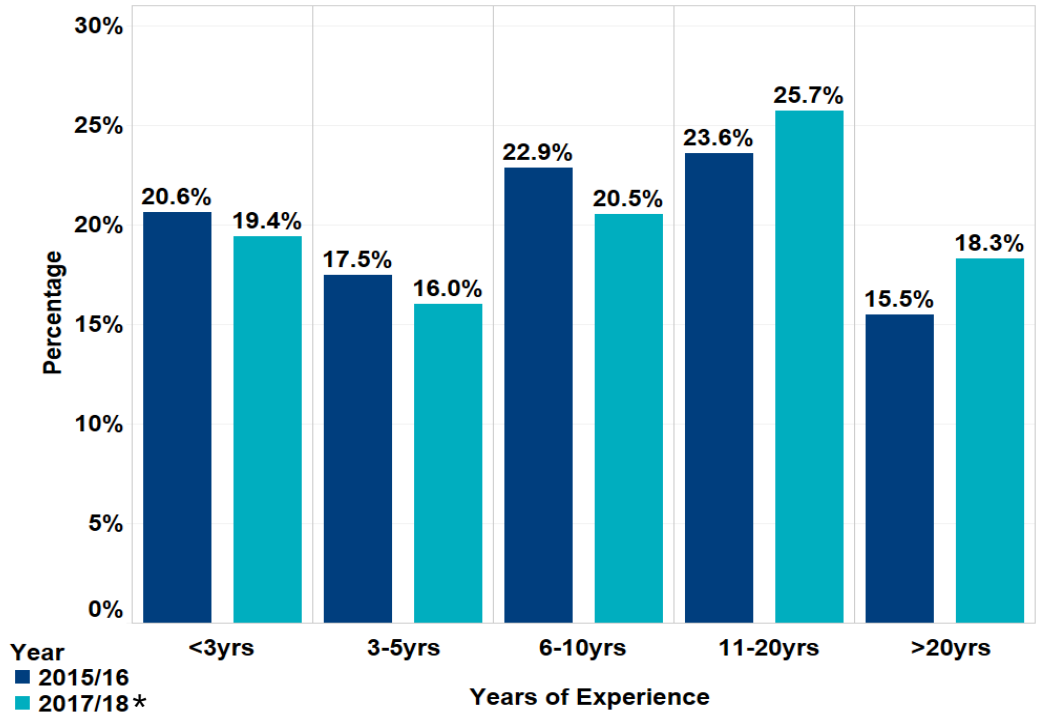
The 2017/18 CCWP online survey data collection tool collected data on a set of questions pertaining to length of experience in nursing. Survey respondents were asked to report on the following:

- Length of Experience as an RN;
- Length of Experience in Critical Care;
- Length of Nurse Experience in the Current Critical Care Unit.

For clarity in reporting, only one measure has been included in this report; Length of Nurse Experience in Critical Care. In contrast, however, the 2017 CCWP provincial report included data for Length of Experience in the Current Critical Care Unit.

Novice nurses are defined as those with less than 3 years of experience; mid-career as those with 3 to 10 years; and experienced nurses as those with over 11 years of service in a critical care unit (Ontario, 2016-17). As shown in Figure 8, 44% of the critical care nursing workforce are experienced nurses with over 11 years of experience, more than two-thirds (36%) are mid-career nurses, and about 20% are novice nurses. The inclusion of neonatal intensive care units in this year's 2017/18 CCWP survey has shifted the data results somewhat, increasing the proportion of the critical care workforce with greater than 20 years' experience.

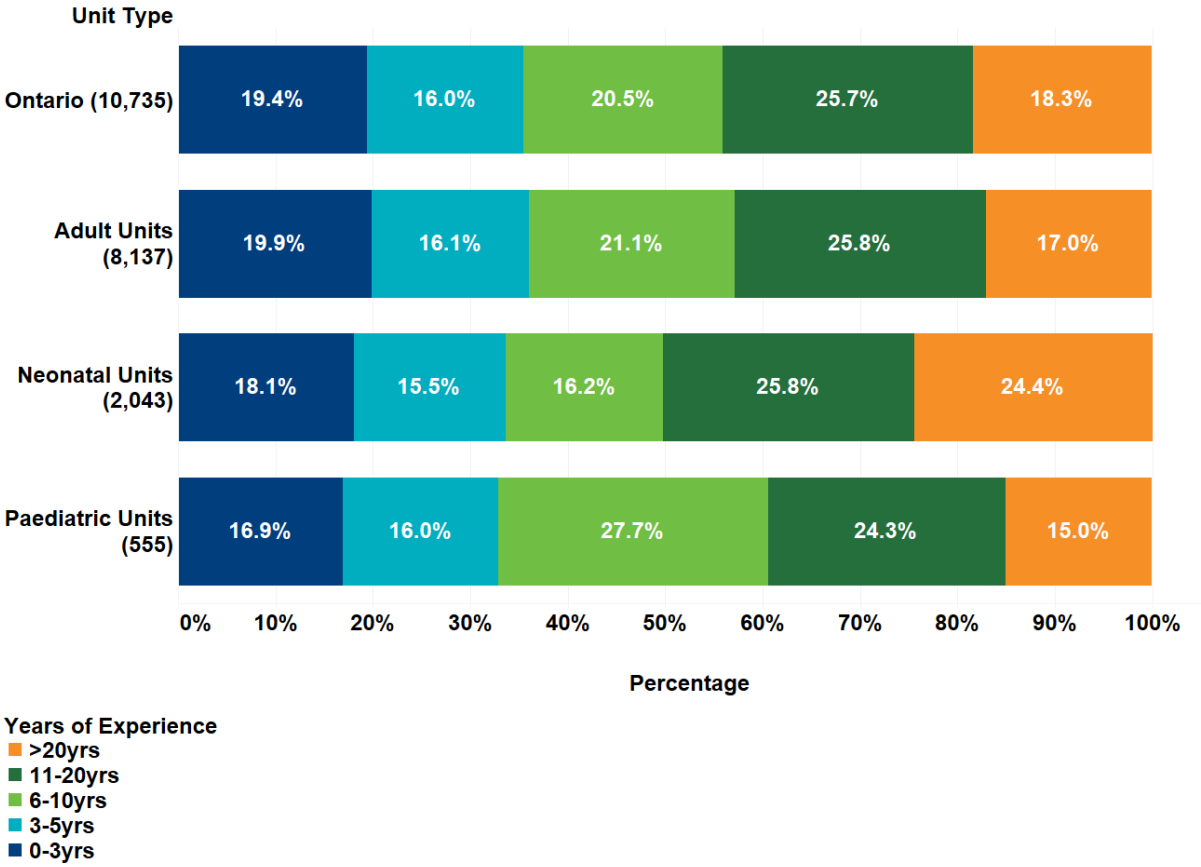
Figure 8: Length of Nurse Experience in Critical Care, Trend Over Time



*NICUs were added this year
Source: CCWP Online Data Collection Tool, 2015/16 Question 2B and 2017/18 Question 8

Figure 9 displays subtle differences between the levels of critical care experience among nurses by type of unit. The paediatric units reported the highest number of mid-career critical care nurses with 43.7% having 3 to 10 years of experience. In this year's CCWP data collection the greatest number of novice nurses, almost 20%, were reported for adult critical care units. Neonatal units have the largest presence of nurses, almost 25%, with experience exceeding 20 years.

Figure 9: Length of Nurse Experience in Critical Care, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 8
N = Number of nurses

4. Nurse Staffing Practices

The information collected through the three data sources (nurse managers, human resources department, and finance department) allows for profiling of different components of nurse staffing in critical care. In this section, the report will provide an overview of the composition of the nursing workforce in relation to:

- Employment status of the nurse workforce;
- Distribution of earned hours;
- Strategies for covering short-term staffing shortages; and,
- Nursing productivity.

4.1 Employment Status

The CCWP analysis has relied upon both human resource data and finance data submitted for the critical care units to report on components of employment status. In the finance data, the Ontario Healthcare Reporting Standards (OHRS) defines six different categories of employment status. For our reporting purposes, these have been grouped into three categories, as identified in Table 5 below.

Table 5: Classification of Employment Status

OHRS Employment Status Group	CCWP Employment Status Group
Full-Time	Full-Time
Part-Time Regular	Part-Time
Part-Time Temporary Full-Time	Part-Time
Part-Time Job Share	Part-Time
Casual Regular	Casual
Casual Temporary Full-Time	Casual

4.1.1 Employment Status by Headcount

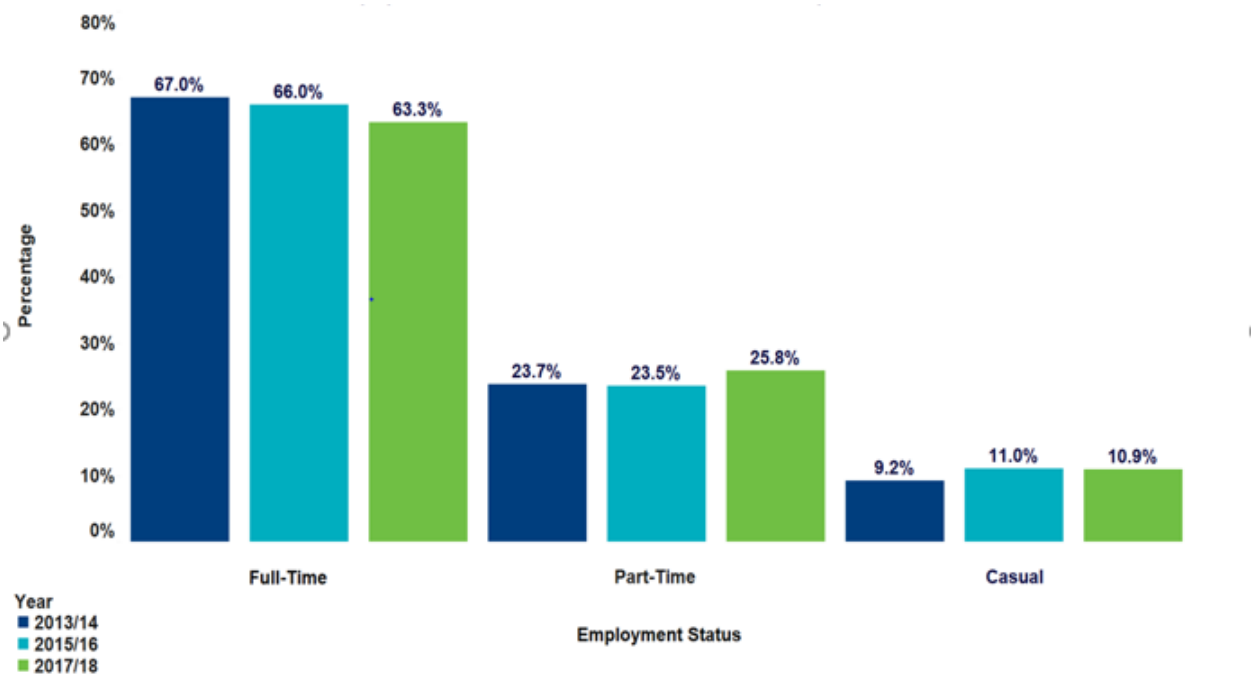
In 2001, Ontario's Nursing Secretariat proposed a 70/30 ratio of full-time to part-time RN staff as a potential target to meet operational efficiencies (Baumann, 2010). This structure would allow unit managers to maintain consistent schedules while using part-time and casual staff for routine coverage and during times of high demand (Baumann, 2010). In a 2014 report prepared for the Registered Nurses' Association of Ontario (RNAO), policymakers were encouraged to continue to pursue the target of attaining 70% of full-time employment for all classes of nurse (RN, Nurse Practitioners (NP) and Registered Practical Nurse (RPN)) in all sectors and geographic areas. Specifically, it was recommended that the 70% full-time target be applied to direct care nurses to enhance continuity of care. The 70% full-time target is also believed to be particularly important for new nursing graduates, to ensure they are integrated into

the health system and to retain Ontario's nursing graduates ("RNAO's 70 percent Full-Time Employment for Nurses Survey: Hospital and Long-Term Care Sectors," 2014).

According to the 2017/18 CCWP survey, 63.3% of Ontario's bedside critical care nurses are employed full-time, while 66.2% of Ontario's general nursing workforce in 2017 consisted of full-time employees ("The Nursing Workforce Canadian Federation of Nurses Unions Backgrounder," 2012). In 2011, 63.4% of Canadian critical care nurses were employed full-time and only 59.5% of Canada's Registered Nurses (across all sectors) worked full-time ("RN Workforce Profile by Area of Response," 2013). It is important to note the different focus of these statistics, as the overall provincial and national figures include nurses in roles other than providing direct patient care, such as nurse educators, clinical nurse specialists, nurse managers, etc.

A summary of trends in employment status over time from the CCWP from 2013/14 to 2017/18 is provided in Figure 10 below and shows a decrease over these periods in the relative proportion of the full-time workforce.

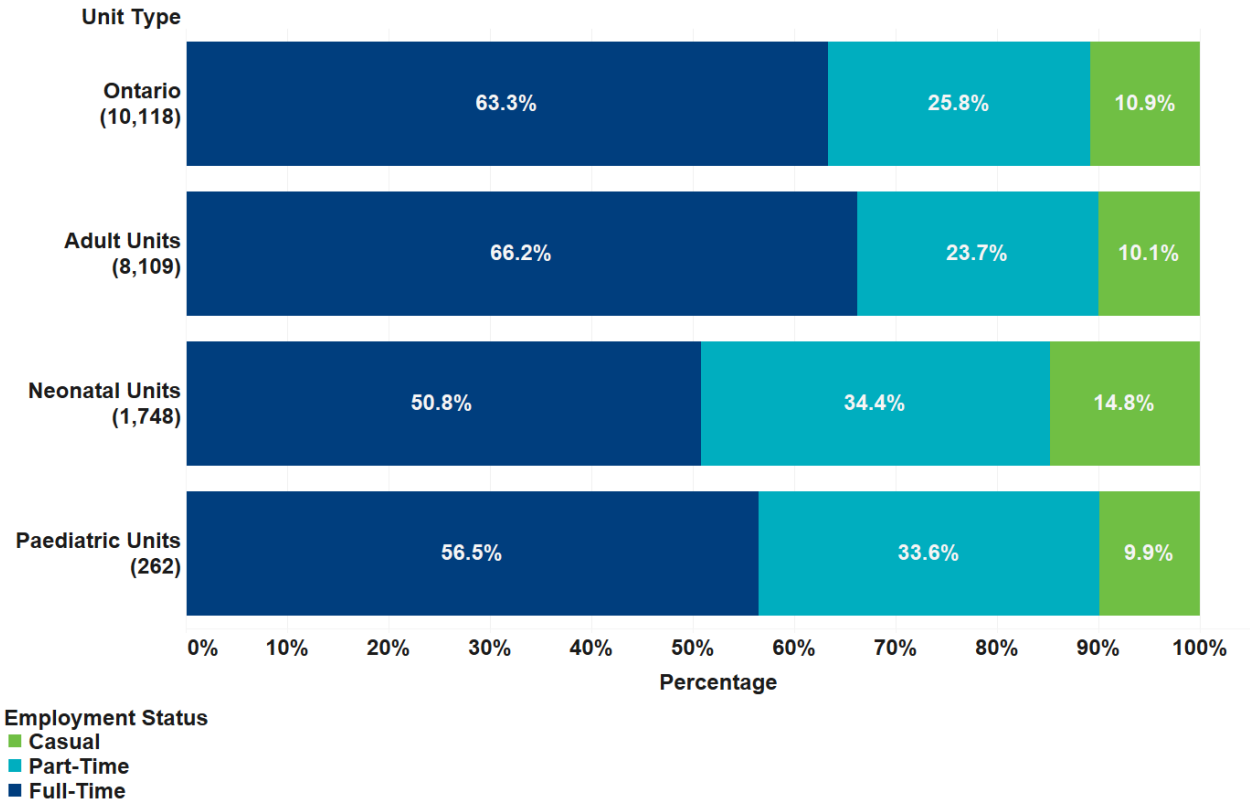
Figure 10: Employment Status of Critical Care Nurses, by Survey Year



Source: 2015/16 and 2017/18 CCWP Human Resource Data Collection Tool, Direct Care Nursing

When examining the employment status of the workforce by unit type, as shown in Figure 11, some differences in staffing practices emerge. Neonatal units have a smaller proportion of full-time staff at 50.8%, while, adult units have the largest proportion of their workforce working full-time at 66.2%.

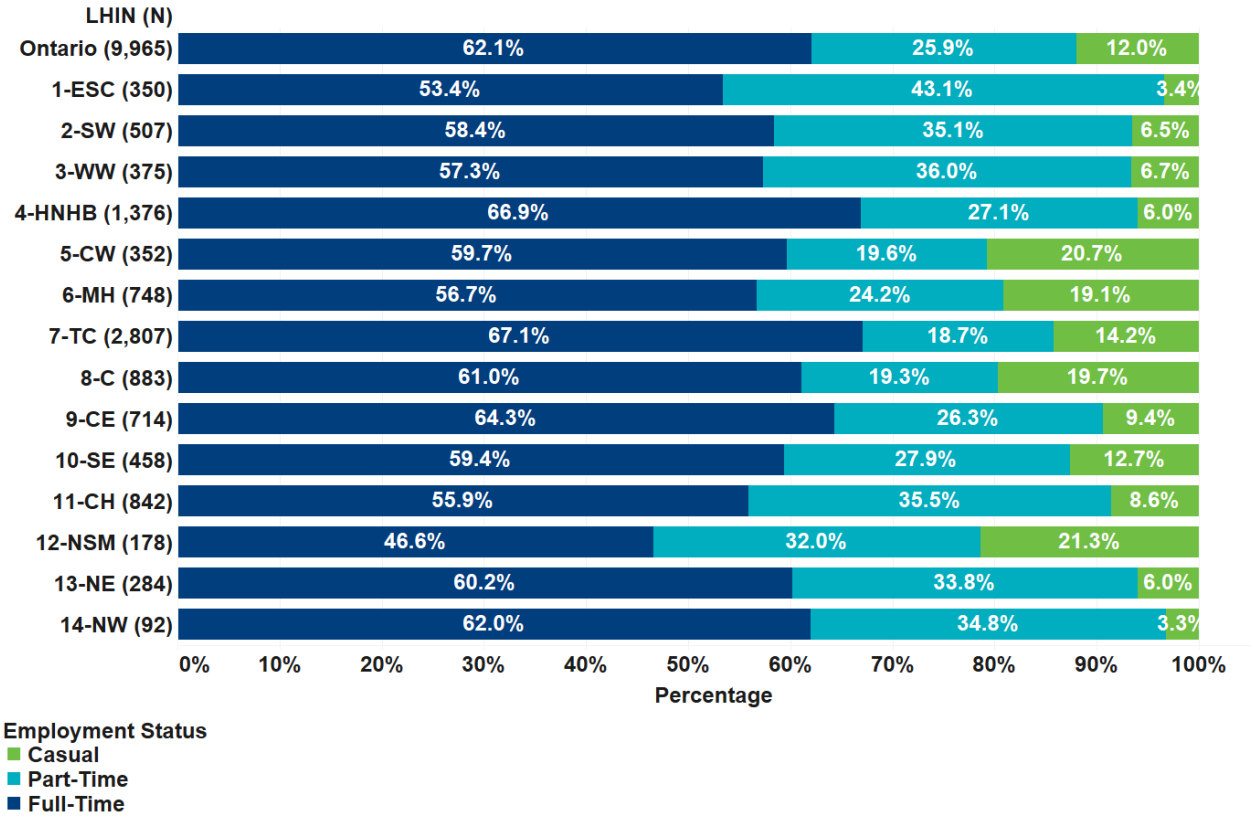
Figure 11: Employment Status of Critical Care Nurses, by Unit Type



Source: 2017/18 CCWP Human Resources Data Collection Tool.
N = Number of nurses

Differences in the composition of the critical care nursing workforce by employment status occur across the province as shown in Figure 12. North Simcoe Muskoka (LHIN 12) has the lowest proportion of full-time staff with only 46.6% of their critical care nursing workforce being full-time staff. Similarly, Erie St. Clair (LHIN 1) also has a lower proportion of full-time staff and the highest proportion of part-time staff in the province with 43.1% of their critical care nursing workforce being part-time staff. There appear to be larger casual staffing pools in North Simcoe Muskoka (LHIN 12) and in the western GTA LHINs with both Central West (LHIN 5) and Mississauga Halton (LHIN 6) having identified approximately 20% of their workforce headcount being from casual staff.

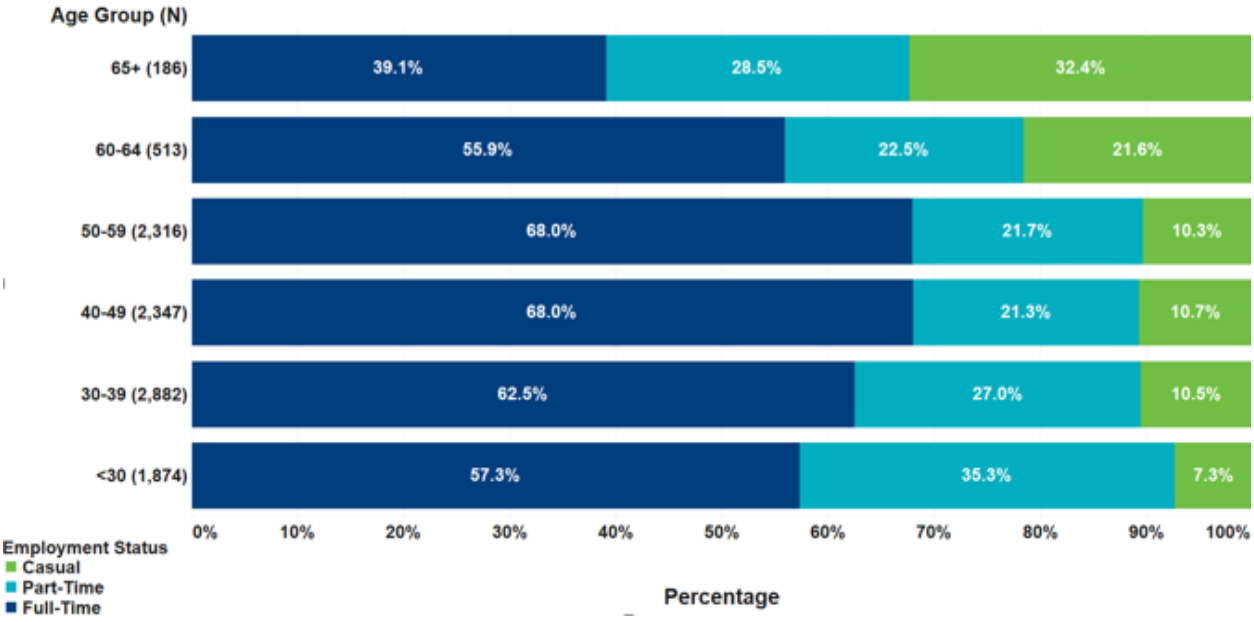
Figure 12: Employment Status of Critical Care Nurses, by LHIN



Source: 2017/18 CCWP OHRS Data from Finance Department Submission.
N = Number of nurses

The method of data collection of nurse demographics in the Human Resources data submission allows for a review of employment status by age groups. As seen in Figure 13, full-time status among critical care nurses aged 40-59 is approaching the target of 70%. The largest group of part-time staff can be found in the under 30-age range.

Figure 13: Employment Status of Critical Care Nurses, by Age Group



Source: 2017/18 CCWP Human Resource Data Collection Tool, Direct Care Nursing
N = Number of nurses

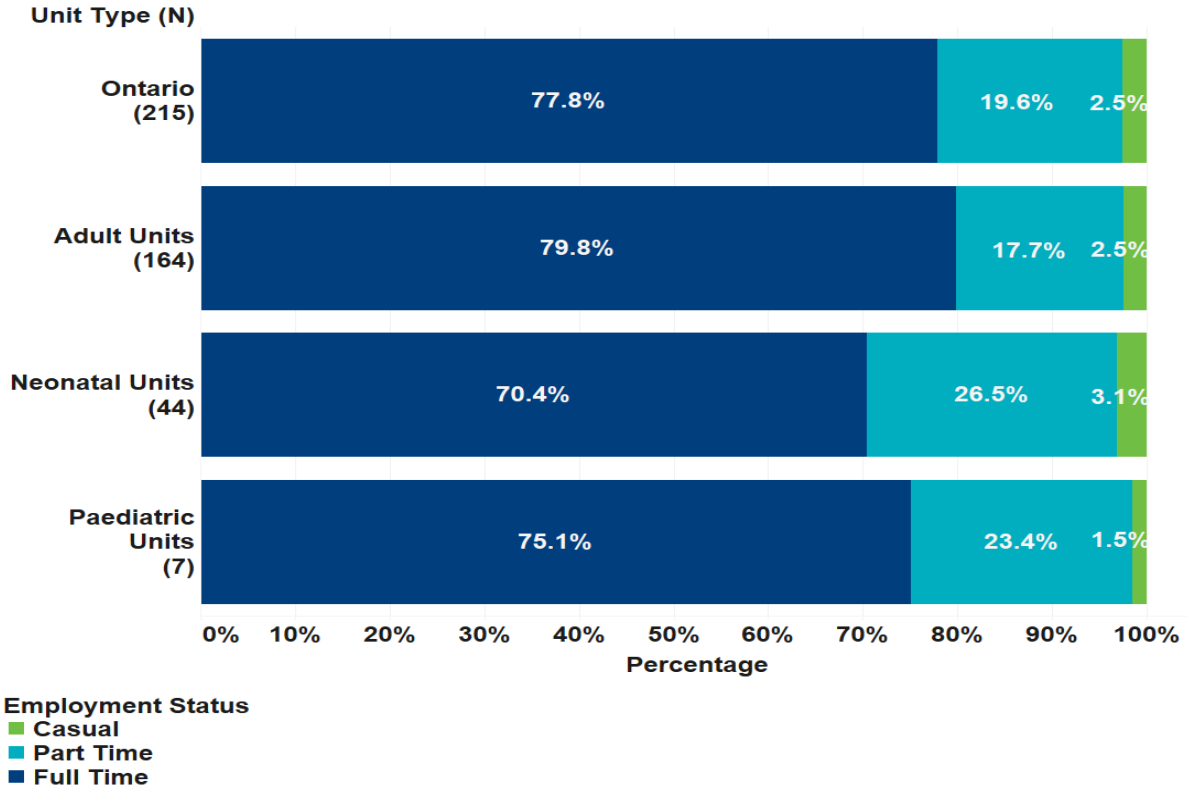
4.1.2 Employment Status by Earned Hours

The CCWP survey also collected information on earned hours, and the proportion of earned hours from full-time, part-time, and casual staff from the finance data collection tool. This provides greater clarity and comparability regarding the proportion of hours worked by staff with different employment statuses.

While almost two-thirds (63.3%) of the critical care workforce in Ontario is full-time staff, 77.8% of earned hours are paid to full-time staff. Earned hours include all hours paid for regularly worked shifts, overtime hours, paid sick hours, paid vacation hours, paid education and orientation hours, and any other paid hours.

As seen in Figure 14, all unit types have over 70% of earned hours from full-time staff. Adult units have the highest proportion of earned hours for full-time staff with almost 80%.

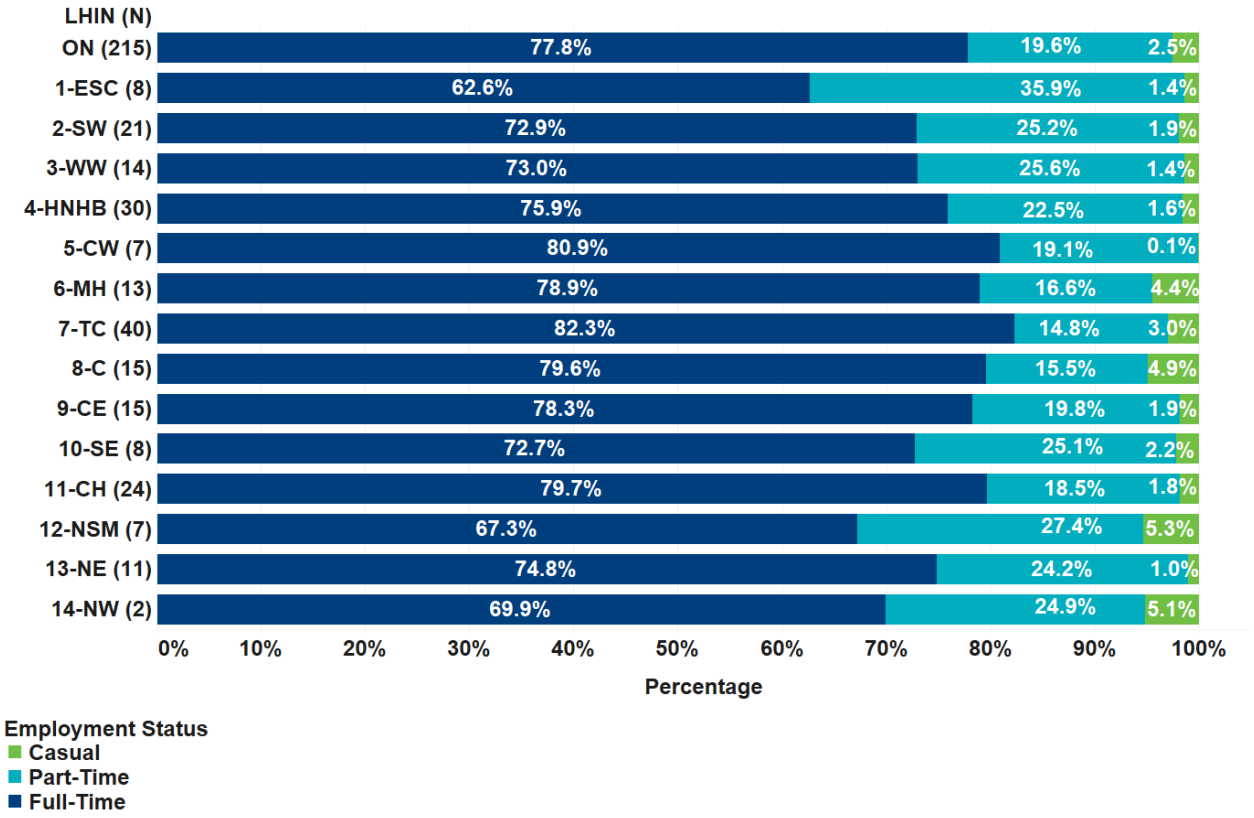
Figure 14: Earned Hours for Critical Care Nurses by Employment Status, by Unit Type



Source: 2017/18 CCWP OHRS Data from Finance Department Submission
N = Number of units.

When looking at staffing practices across the province, as shown in Figure 15, differences in the proportion of earned hours for full-time staff are also evident. Some of the less urban LHINs have a greater reliance on earned hours from part-time staff, particularly Erie St. Clair (LHIN 1) and North Simcoe Muskoka (LHIN 12) where the proportion of earned hours from part-time staff is 35.9% and 27.4% respectively, higher than the 20% provincial average. As well, there are a few LHINs where casual staff play a greater role in staffing critical care units, particularly North Simcoe Muskoka (LHIN 12), North West (LHIN 14), and Central (LHIN 8) where it is close to 5%.

Figure 15: Earned Hours for Critical Care Nurses by Employment Status, by LHIN

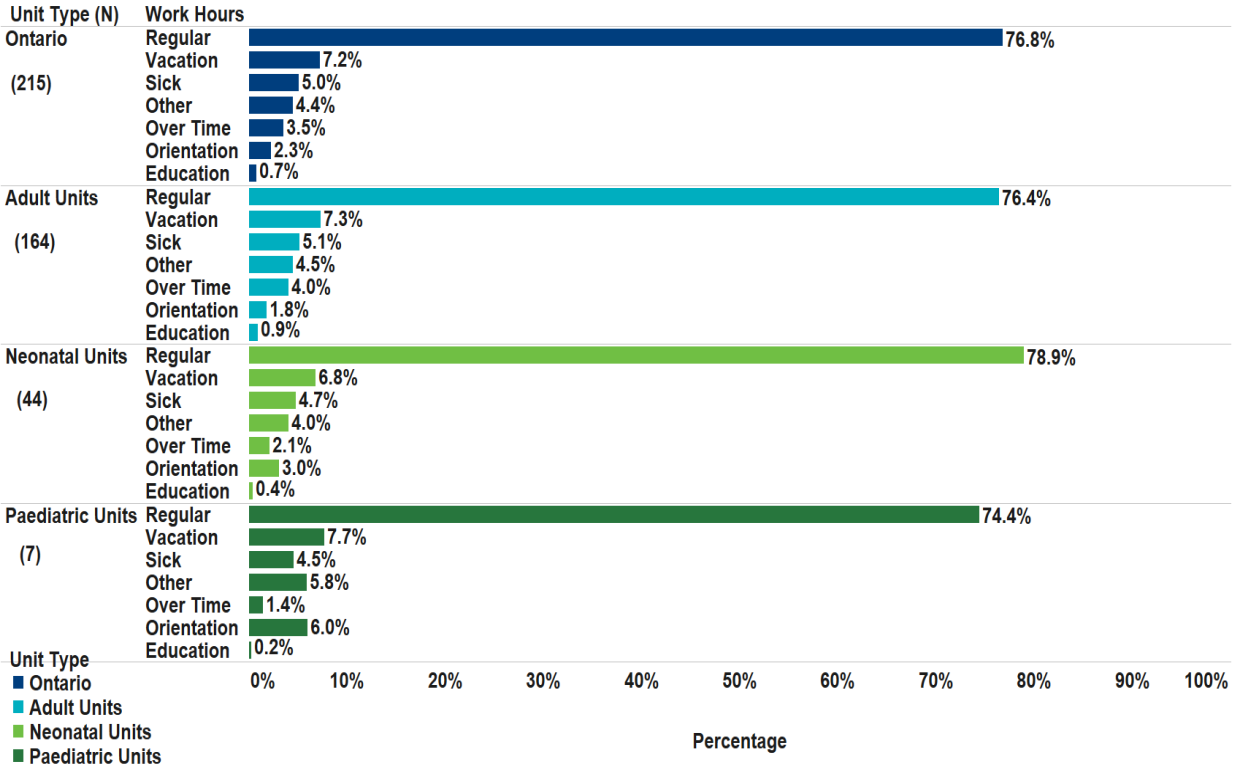


Source: 2017/18 CCWP OHRS Data from Finance Department Submission.
N = Number of units.

4.2 Distribution of Earned Hours

As noted above, earned hours include all hours paid for regularly worked shifts, overtime hours, paid sick hours, paid vacation hours, paid education and orientation hours, and any other paid hours. As shown in Figure 16, about 80% of all earned hours in critical care units in Ontario are for the direct provision of patient care in regular worked and overtime hours.

Figure 16: Critical Care Nurse Earned Hours by Type, by Unit Type



Source: 2017/18 CCWP OHRS Data from Finance Department Submission.
N = Number of units

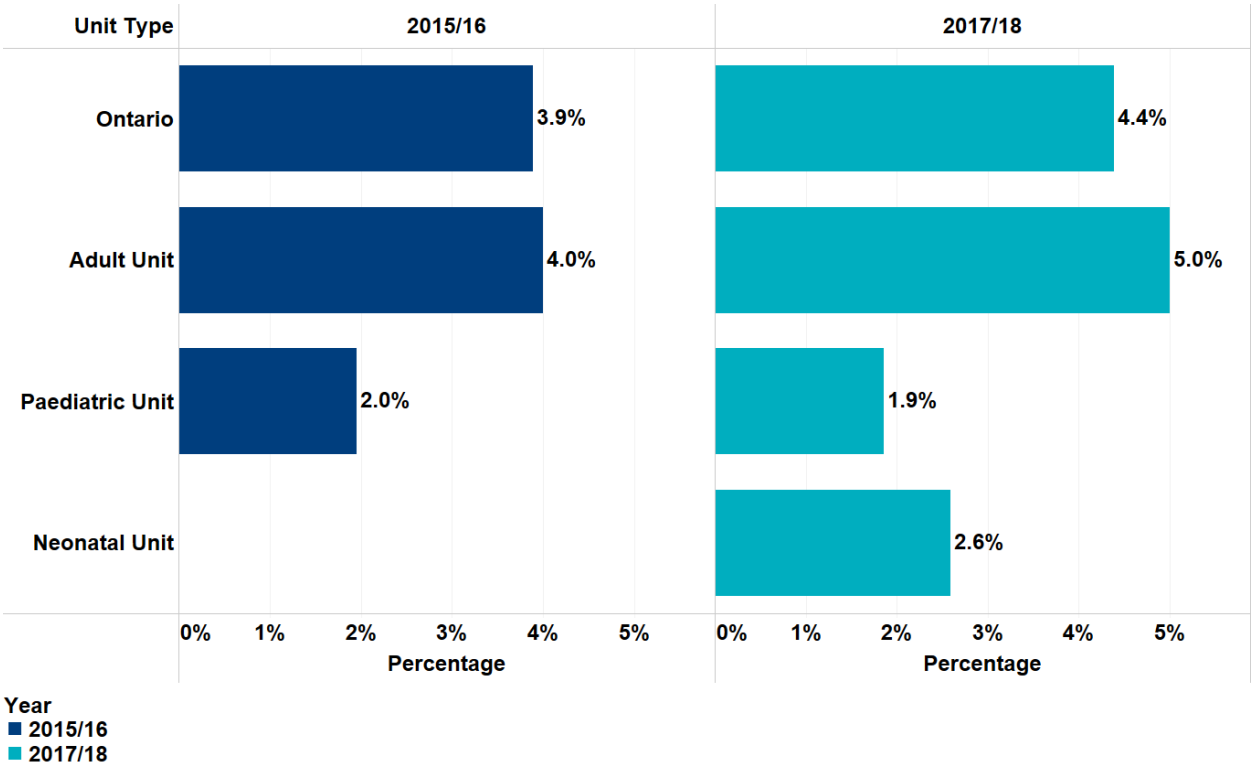
In this section, a review of overtime rate, sick rate, and education hours will be provided by unit types and across LHINs where regional differences are notable.

4.2.1 Overtime Hours as a Proportion of Productive Hours

Research has shown a relationship between excessive hours of work, fatigue and, client and nurse safety). More specifically, (Ma & Stimpfel, 2018) demonstrated that overtime (more nurses working overtime or longer overtime hours) has been associated with lower collaboration at the unit, which is critical among healthcare professionals. Researchers see improved intra-professional relationships in nursing as key to helping achieve optimal patient and health-system outcomes (Lankshear, 2018).

To understand the reliance on overtime work to cover patient care activities, an analysis was undertaken to review the proportion of productive hours (regular working hours and overtime hours) that were filled by overtime staff. Provincially, the overtime rate for front-line staff in critical care units was 4.4%, as shown in Figure 17. This rate varied from a low of 1.9% in paediatric units to a high of 5.0% in adult units. The rates by unit type have increased in adult units from the last survey in 2015/16 but were similar to those in the previous survey for paediatric units.

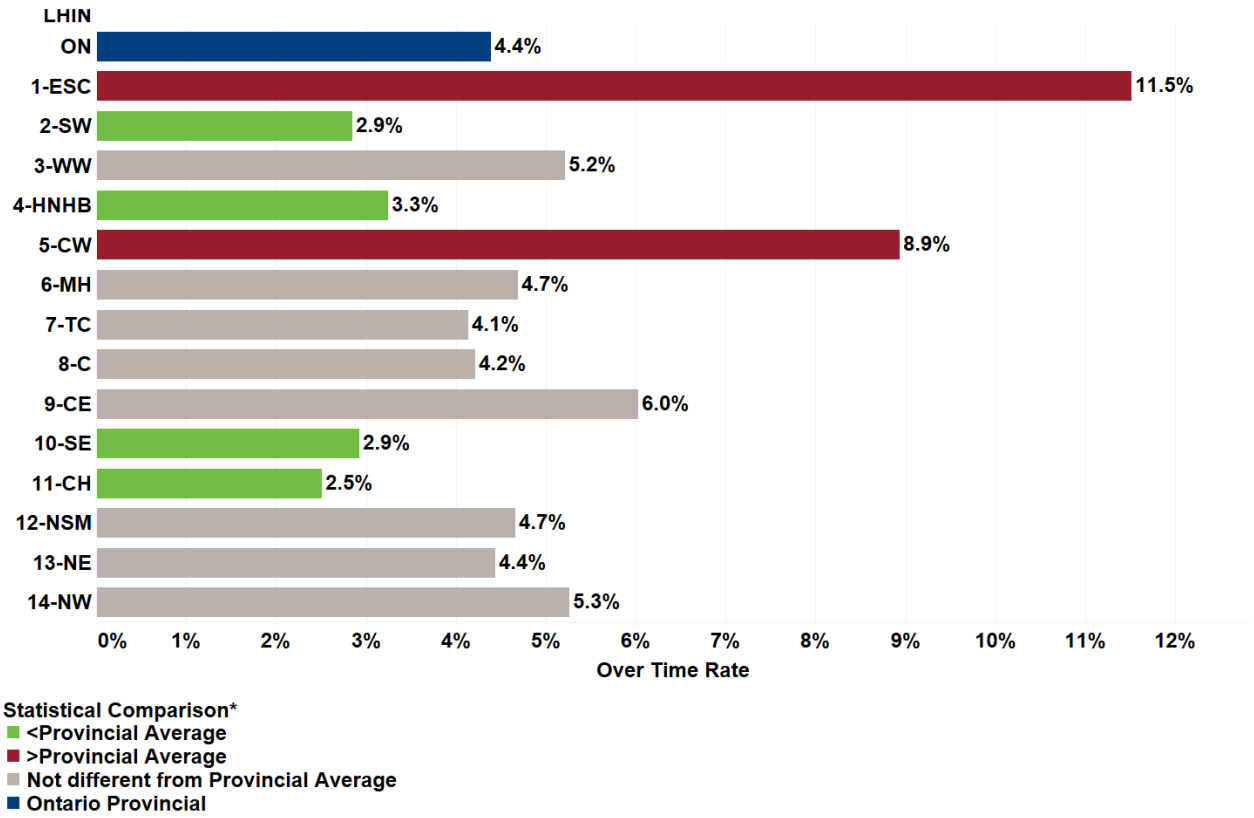
Figure 17: Overtime Hours as a Proportion of Productive Hours for Critical Care Nurses, by Unit Type (FY 2015/16 and 2017/18)



Source: 2015/16 CCWP OHRS Data from Finance Department Submission
Source: 2017/18 CCWP OHRS Data from Finance Department Submission

Across the province, the overtime rate is relatively stable and close to the provincial average (4.4%) with a few notable exceptions, as shown in Figure 18. In the Champlain LHIN (LHIN 11), the overtime rate is very low at 2.5%. At the other end of the spectrum, the Erie St. Clair (LHIN 1) has the highest overtime rate for critical care units at 11.5%. The overtime rate in the Central West LHIN (LHIN 5) is also quite high at 8.9%. This suggests challenges in staffing units with planned resources in both the Erie St. Clair and Central West LHINs.

Figure 18: Overtime Rate for Critical Care Nurses by LHIN, Showing Statistical Significance

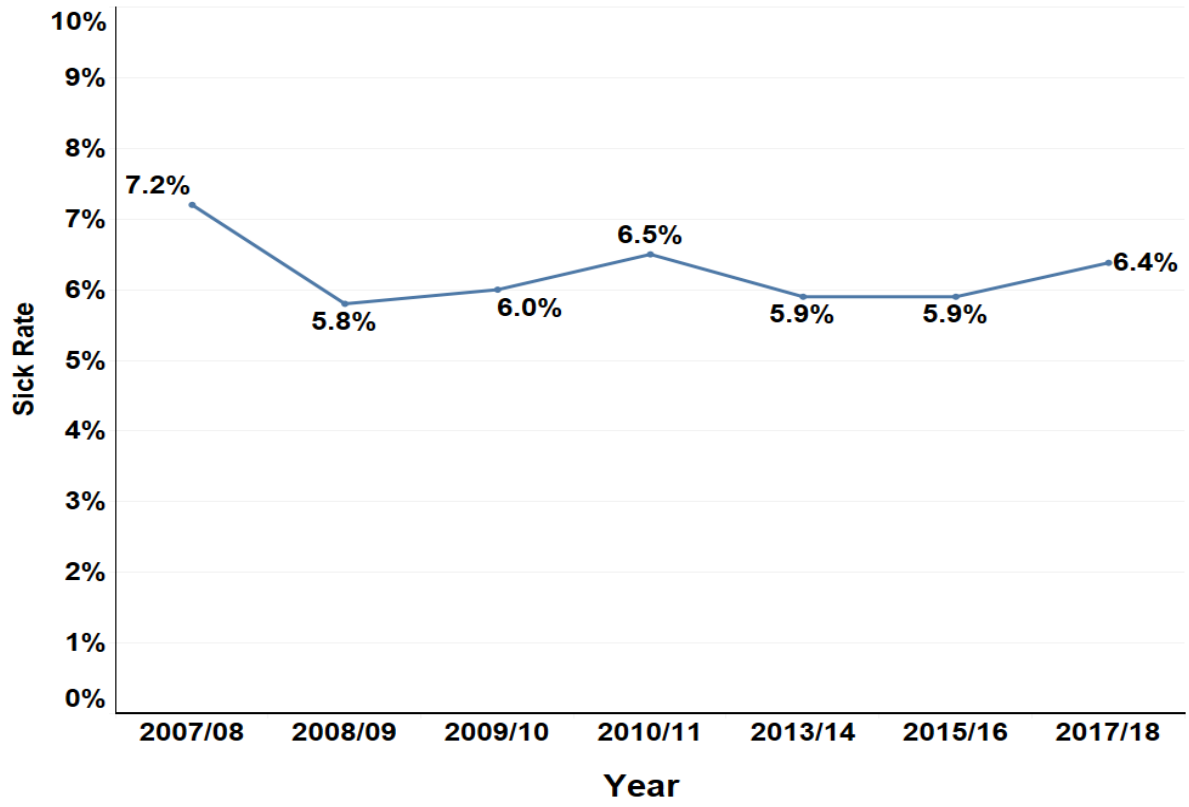


Source: 2017/18 CCWP OHRS Data from Finance Department Submission.

4.2.2 Sick Time

In 2017, the Canadian Federation of Nurses Unions reported that full-time Canadian nurses had an absentee rate of 8.7% (Consulting, 2017) across all provinces. The rates for sick time in critical care seem to be considerably below this rate, as shown in Figure 19. Over the years since 2007, the CCWP sick rate for critical care nurses has been fluctuating, with an increase in the most recent year of the survey.

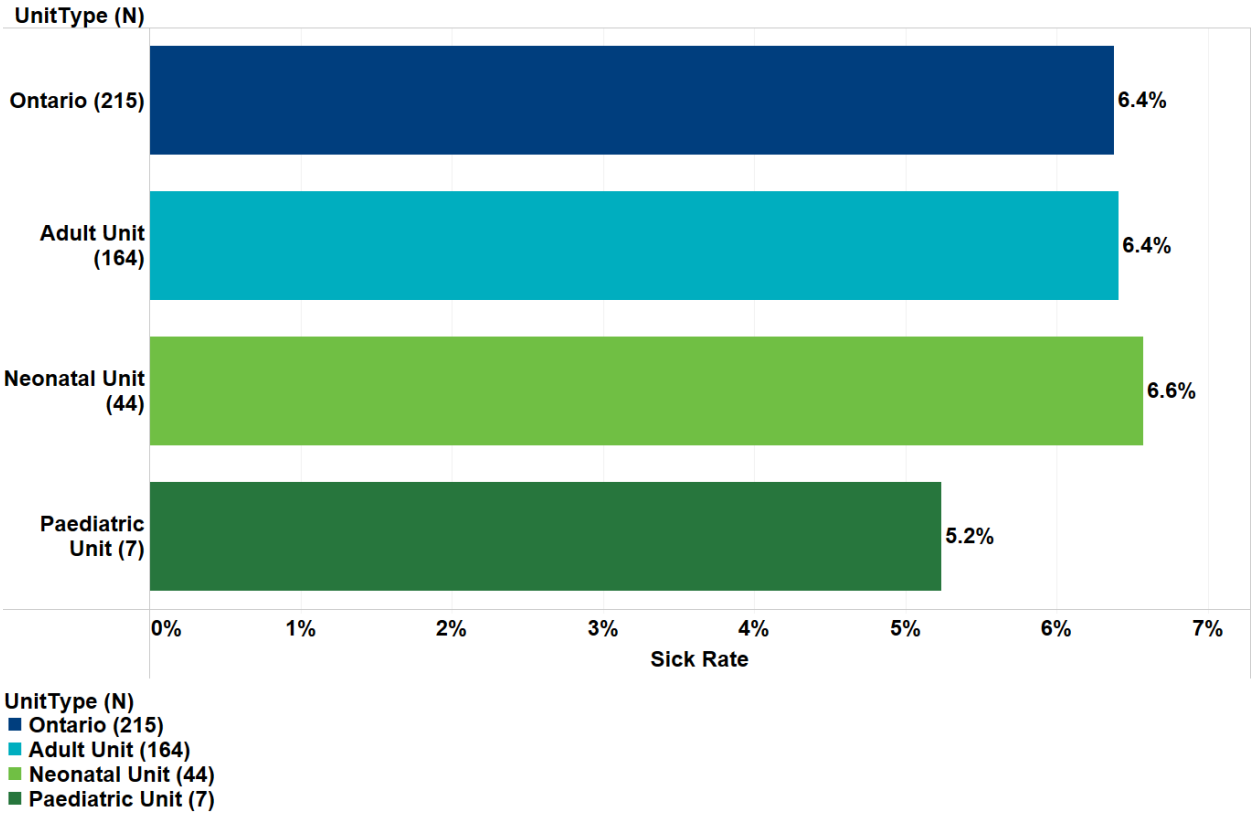
Figure 19: Sick Rate for Full-Time Critical Care Nurses, Trend Over Time



Source: 2017/18 CCWP OHRS Data from Finance Department Submission

As shown in Figure 20, the provincial sick rate in critical care units for full-time front-line staff is 6.4%. Most Unit Types have rates similar to this, although neonatal units have a sick rate slightly higher at 6.8% while paediatric critical care units have the lowest sick rates at 5.2%

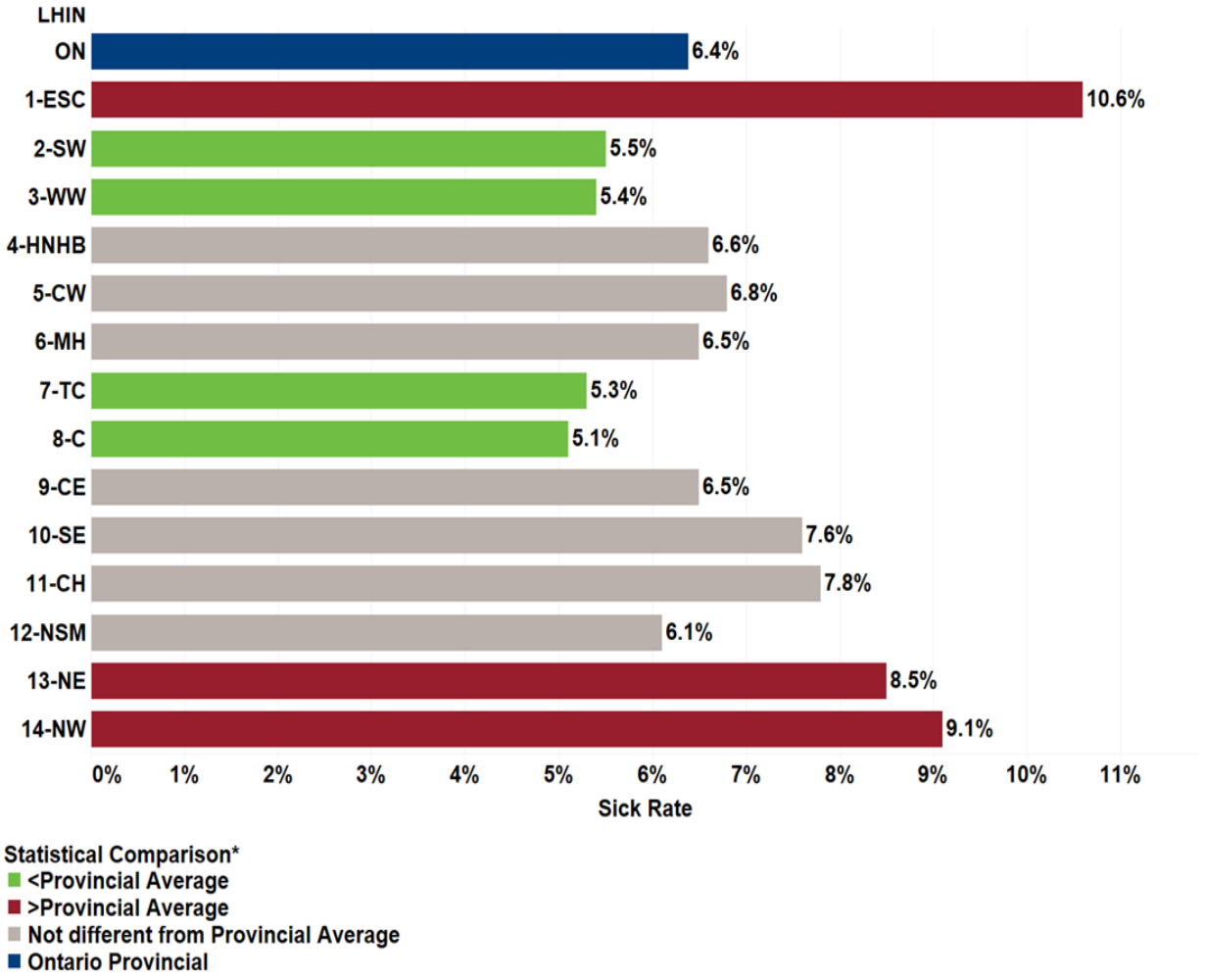
Figure 20: Sick Rate for Full-Time Critical Care Nurses, by Unit Type



Source: 2017/18 CCWP OHRS Data from Finance Department Submission
N = Number of units

Across the province, the sick rate is reasonably stable and close to the provincial average (6.4%) with a few notable exceptions, as shown in Figure 21. In the Central LHIN (LHIN 8), the overtime rate is lowest at 5.1%. At the other end of the spectrum, the Erie St. Clair (LHIN 1) has the highest sick rate for critical care units at 10.6%. The sick rate in the North West LHIN (LHIN 14) is also quite high at 9.1%.

Figure 21: Sick Rate for Critical Care Nurses by LHIN, Showing Statistical Significance

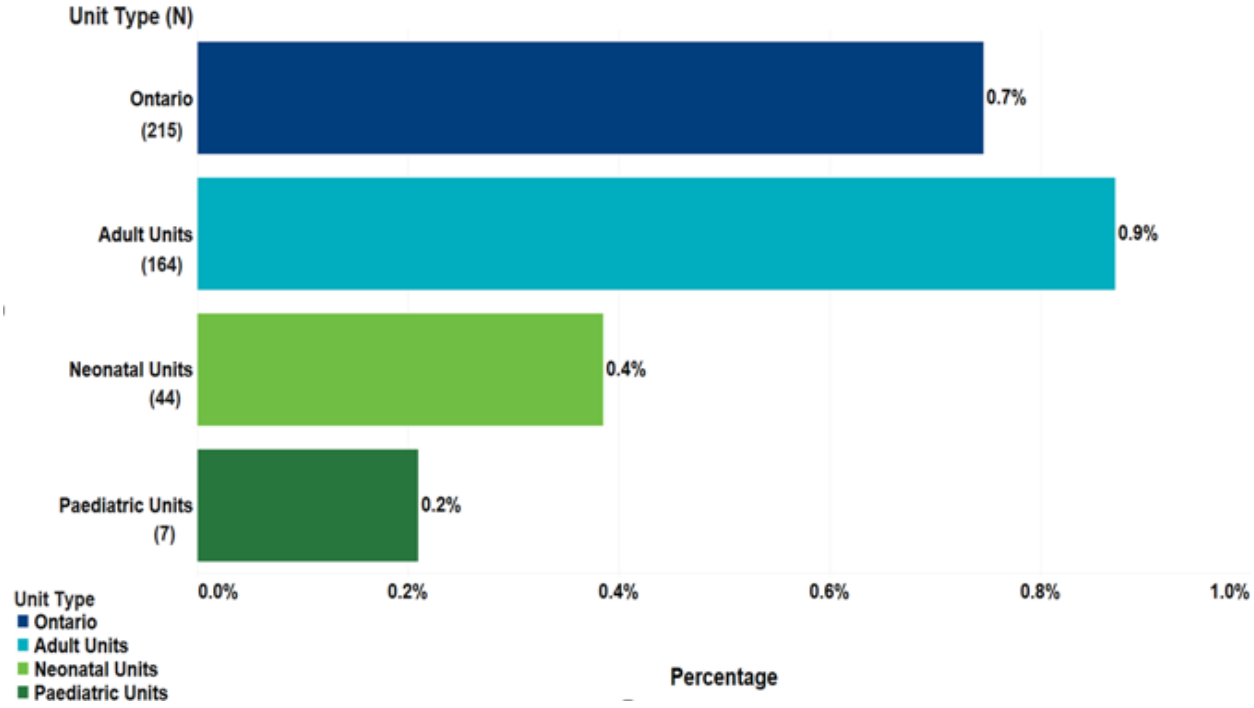


Source: 2017/18 CCWP OHRS Data from Finance Department Submission.

4.2.3 Education Time

Education hours are worked hours for which a staff member is attending classes to enhance their personnel education qualifications. Education hours are not intended to capture hours for in-service, conventions or conferences ("OHRS V10.0 - Glossary of Terms - Secondary Statistical Accounts," 2016). As shown in Figure 22, critical care nurses working in paediatric and neonatal units appear to have similar rates of education hours as a proportion of total earned hours at around 0.3%. While critical care nurses working in adult units have a higher proportion of earned hours for education time at 0.9%.

Figure 22: Education Hours as a Proportion of Total Earned Hours for Critical Care Nurses, by Unit Type



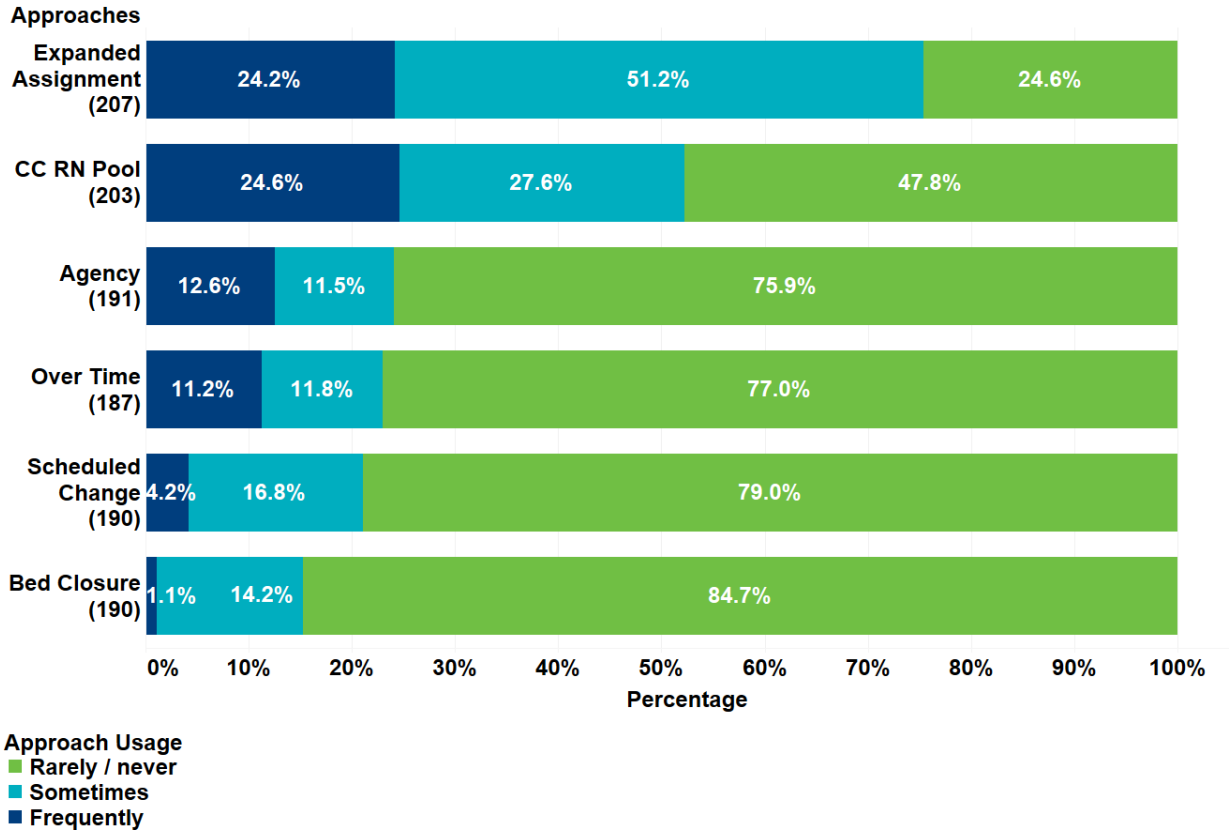
Source: 2017/18 CCWP OHRS Data from Finance Department Submission.
N = Number of units

4.3 Managing Short-Term Nursing Shortages

The complexity of critical care patients requires nurses with advanced training and makes shortages in this specialization particularly challenging, as it requires replacement of nurses with appropriate skillsets. Nursing shortages can also be viewed as either a short-term issue or an on-going long-term issue with differing challenges. Overall, a global study on nursing shortages suggests solutions should focus on the motivation of nurses, and incentives to recruit and retain them, to encourage them back into nursing, as well as the broader supply and demand planning necessary for any profession (Buchan, 2008). This section will look at the short-term solutions employed by critical care units to manage nursing shortage challenges.

Figure 23 shows that "expanded assignments" are the most frequently and sometimes used approach to short-term nursing shortage in the province, with 24.2% and 51.2% using this approach amongst critical care units respectively. "CC RN Pool" is the next most frequently used approach with 52% of units using this strategy frequently or sometimes.

Figure 23: Approaches to Manage Short-Term Nursing Shortages, Provincial



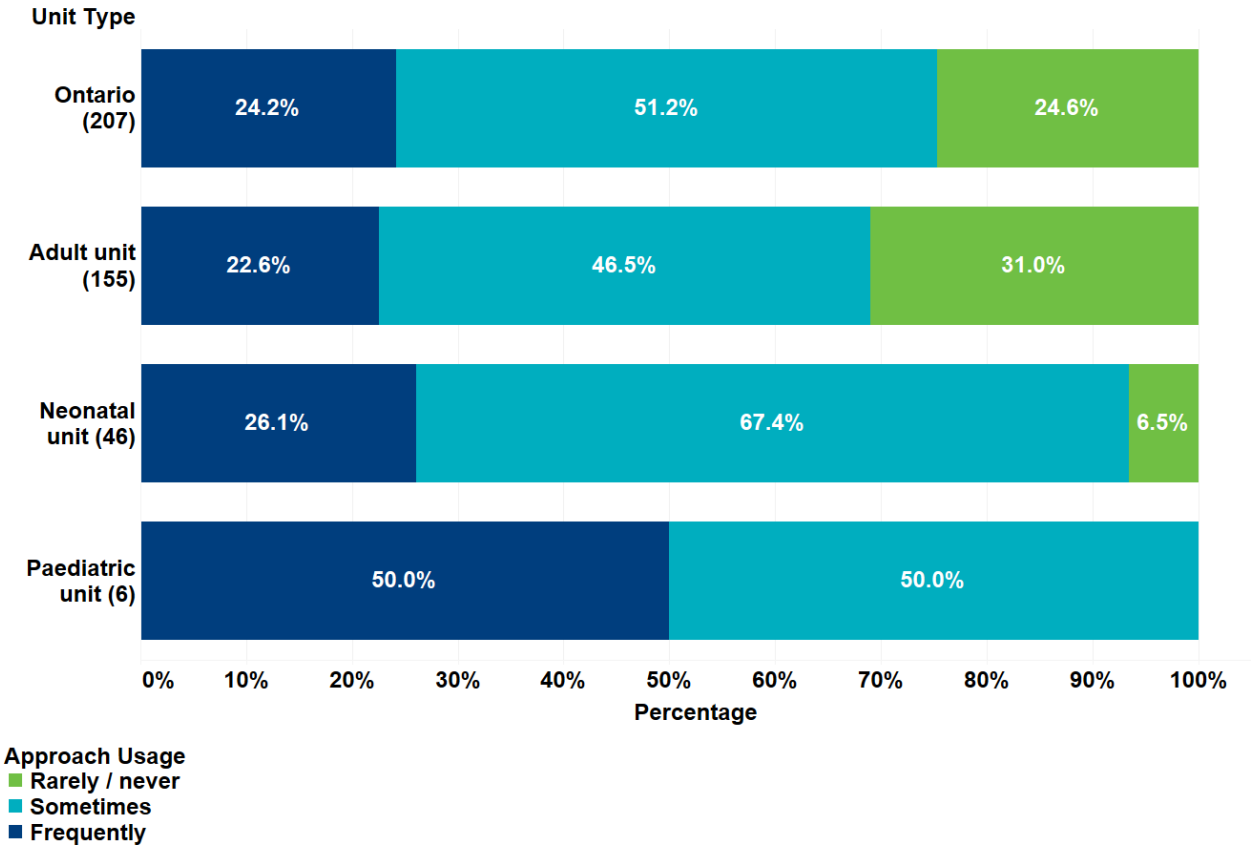
Source: 2017/18 CCWP Online Data Collection Tool, Question 34
N = Number of units

The figures below show the breakdown of the top three most frequently used approaches to short-term nursing shortages by unit type.

4.3.1 Expanded Assignments

An expanded assignment occurs when a nurse is asked to assume care for more patients than initially planned. For example, instead of caring for two patients as would be ideal, a nurse would be tasked with caring for three patients. As shown in Figure 24, paediatric units frequently used "expanded assignments" half of the time (50%) on their units while adult and neonatal units noted using this strategy frequently only 22.6% and 26.1% of the time respectively.

Figure 24: Use of "Expanded Assignments" to Manage Short-Term Nursing Shortages, by Unit Type

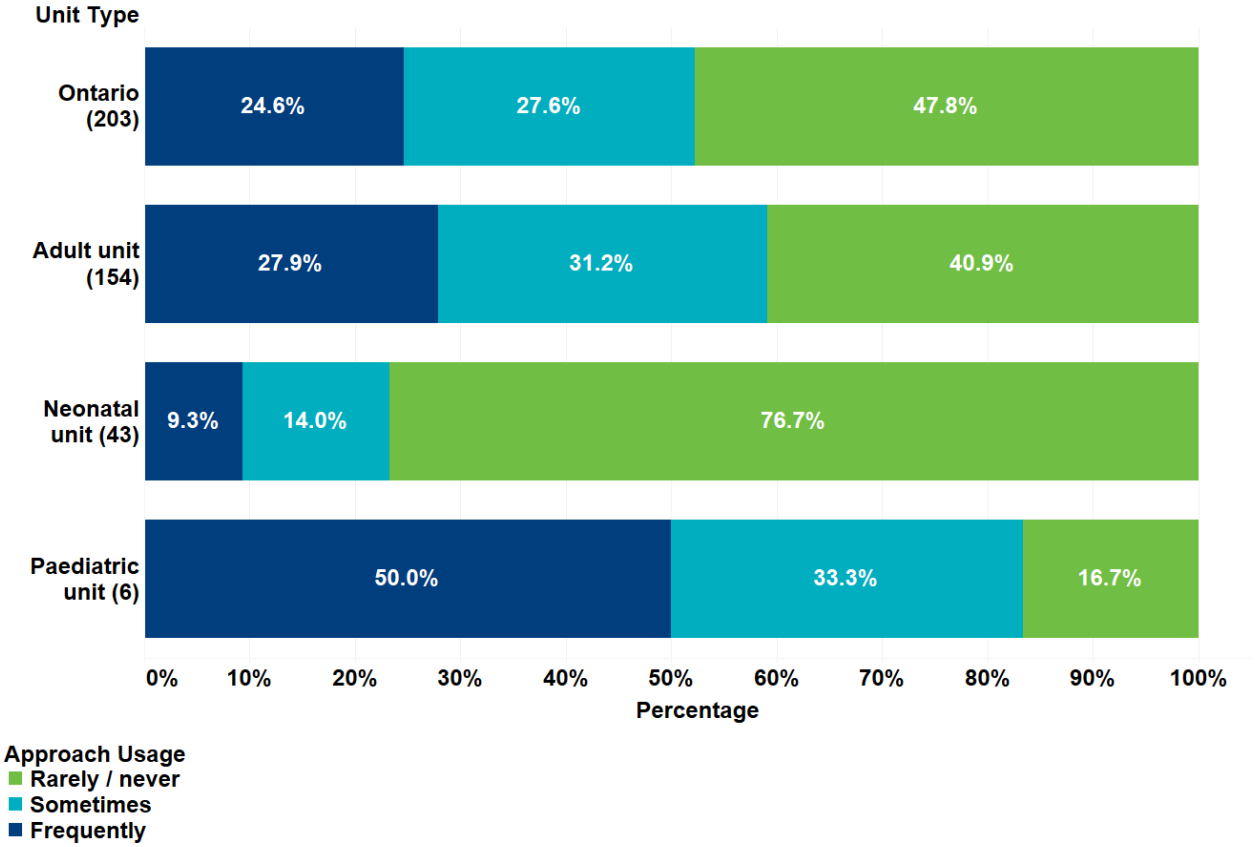


Source: 2017/18 CCWP Online Data Collection Tool, Question 34
N = Number of units

4.3.2 Critical Care Nursing Pools

Critical care nursing pools are a group of hospital-employed nurses not assigned to a specific nursing unit. These nurses are made available to cover staffing shortages in critical care units or other program areas. As shown in Figure 25, paediatric critical care units reported frequently using a critical care nursing pool in 50% of their units. Adult units noted using critical care nursing pools frequently in about 28% of their units, while neonatal units only used these pools frequently in about 9% of units.

Figure 25: Use of "Critical Care Nursing Pool" to Manage Short-Term Nursing Shortages, by Unit Type

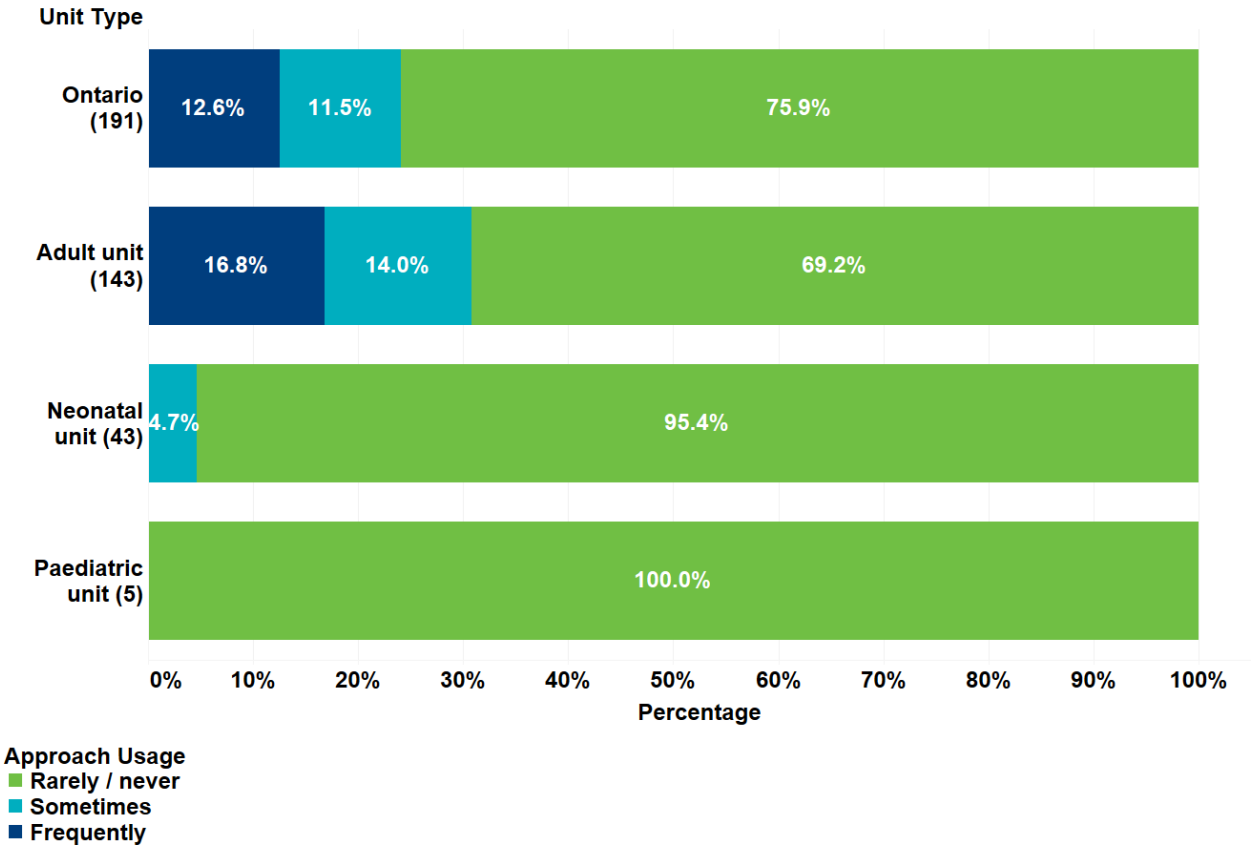


Source: 2017/18 CCWP Online Data Collection Tool, Question 34
N = Number of units

4.3.3 Agency Staffing

In times of nursing shortage, a third-party staffing agency may be used to provide additional nursing staff. In recent years, hospitals have been working to move away from relying on agency staff; however, their use remains in place for some units. From Figure 26, adult units frequently use "agency staff" in 16.8% of their units. For neonatal units, 4.7% of units noted using this strategy sometimes to cover short-term nursing needs, and paediatric units noted never using agency staff in their critical care units.

Figure 26: Use of "Agency Staff" to Manage Short-Term Nursing Shortages, by Unit Type



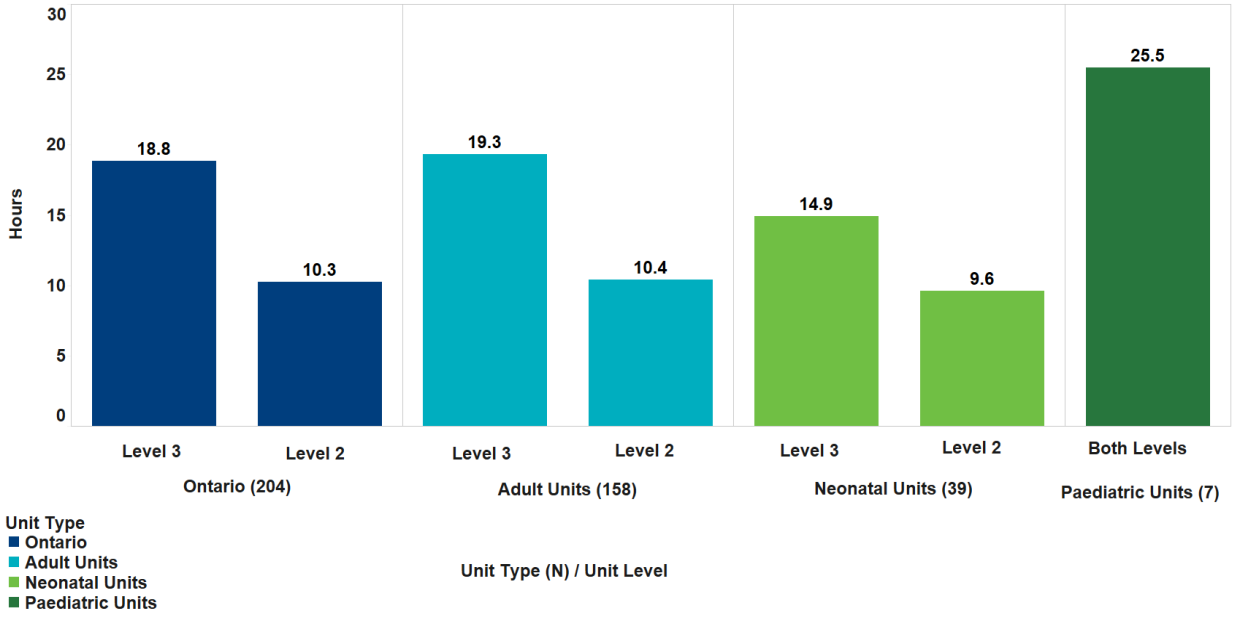
Source: 2017/18 CCWP Online Data Collection Tool, Question 34
N = Number of units

4.4 Nursing Patient Load

When patient-to-nurse staffing levels are high, (e.g. a single nurse is responsible for a greater number of patients) studies have found that a range of negative health outcomes are associated with the practice, including increased mortality rates; adverse events after surgery; increased incidence of violence against staff; increased accident rates and patient injuries; and increased cross infection rates (Buchan, 2008). At the same time, it is important to utilize specialized critical care nursing resources effiecently. A common productivity and efficiency measure used to understand nursing workload is worked hours per patient day. Nursing Hours per Patient Day is simply a ratio of how many hours of nursing care are provided for each patient day on the unit (Nash-Arnold, 2015).

Worked hours per patient day varies across unit types and levels of care, as patient needs and care demands differ. As shown in Figure 27, paediatric units have 25.5 worked hours per patient day, reflecting the complex care needs of the paediatric patient population. At the lower end of patient acuity, Level 2 units for both adults and neonates have around 10 worked hours per patient day.

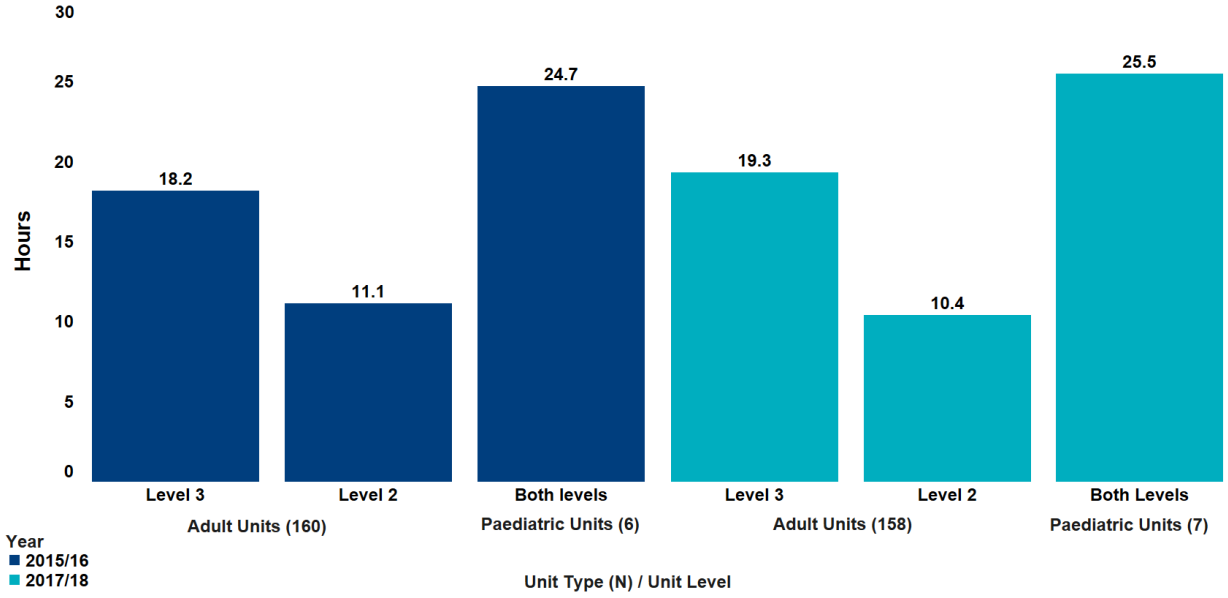
Figure 27: Critical Care Nurse Worked Hours per Patient Day, by Unit Type and Level of Care



Source: 2017/18 CCWP OHRS Data from Finance Department Submission
N = Number of units

In Figure 28, results from the 2017/18 CCWP survey were contrasted against the findings from the 2015/16 CCNWP survey for worked hours per patient day, with only slight differences over the two time periods.

Figure 28: Critical Care Nurse Worked Hours per Patient Day by Year, by Unit Type and Level of Care



Source: 2015/16 CCWP OHRS Data from Finance Department Submission
Source: 2017/18 CCWP OHRS Data from Finance Department Submission
N = Number of units

5. Nurse Training

General nursing workforce research across Canada has reported lower turnover in healthcare organizations with focused RN training and staff development efforts (Rondeau, 2009). In particular, according to this study, healthcare organizations are encouraged to pay attention to workforce training investments as an effective long-term solution to RN shortages (Rondeau, 2009).

This chapter will show the provincial overview, (by unit type) of the following nurse training dimensions:

1. Internationally educated nurses in critical care
2. Educational attainment of critical care nurses
3. Prevalence of nurses trained to the Critical Care Nurse Training Standards
4. Life Support Training of critical care nurses for:
    a. Advanced Cardiac Life Support (ACLS)
    b. Neonatal Resuscitation Program (NRP)
    c. Paediatric Advanced Life Support (PALS)
5. Professional development investments

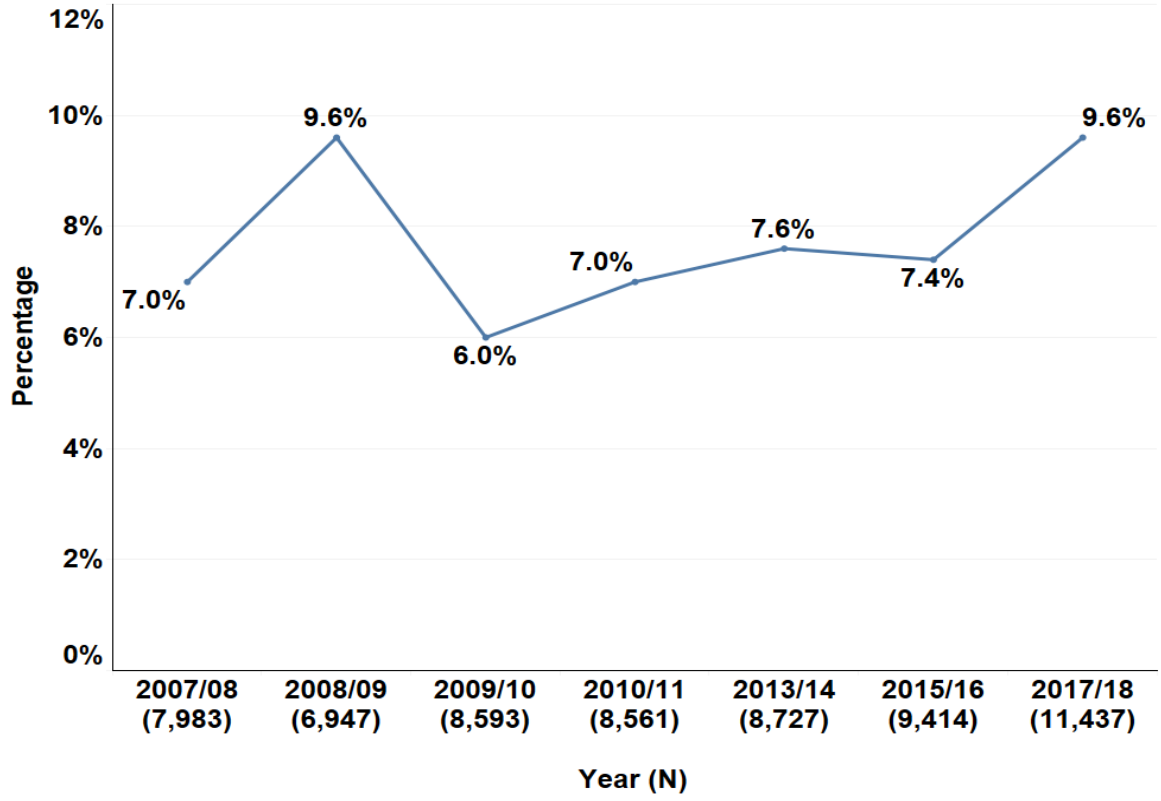
5.1 Internationally Educated Nurses

There is a global shortage of, and therefore a global competition for, health professionals in all disciplines. ("The Nursing Workforce Canadian Federation of Nurses Unions Backgrounder," 2012). Being able to attract internationally trained nurses suggests an appealing healthcare employment market in Canada. In 2013, 8.6% of RNs employed in Canada graduated from an international nursing program ("The Nursing Workforce Canadian Federation of Nurses Unions Backgrounder," 2012). This percentage is slightly lower for critical care nurses.

Many internationally-educated nurses face difficulty becoming accredited in Ontario due to financial hardships, recognition of foreign credentials, and obtaining placements to upgrade their educational qualifications (Blythe, 2009) (Higginbottom, 2011). To support internationally trained nurses the Health Workforce Planning Branch of MOHLTC collaborates with various partners to assist with the integration of internationally trained nurses into Ontario's nursing workforce.

Since 2007, the CCWP has consistently collected data on the percentage of critical care nurses who obtained training outside of Canada. Figure 29 provides a snapshot of the provincial trend for this indicator. The percentage of internationally trained nurses has remained relatively consistent from 2011/12 to 2015/16 in the range of 7% to 7.6%. However, the data submitted in this year's 2017/18 CCWP survey indicates that this number has further increased to 9.6%.

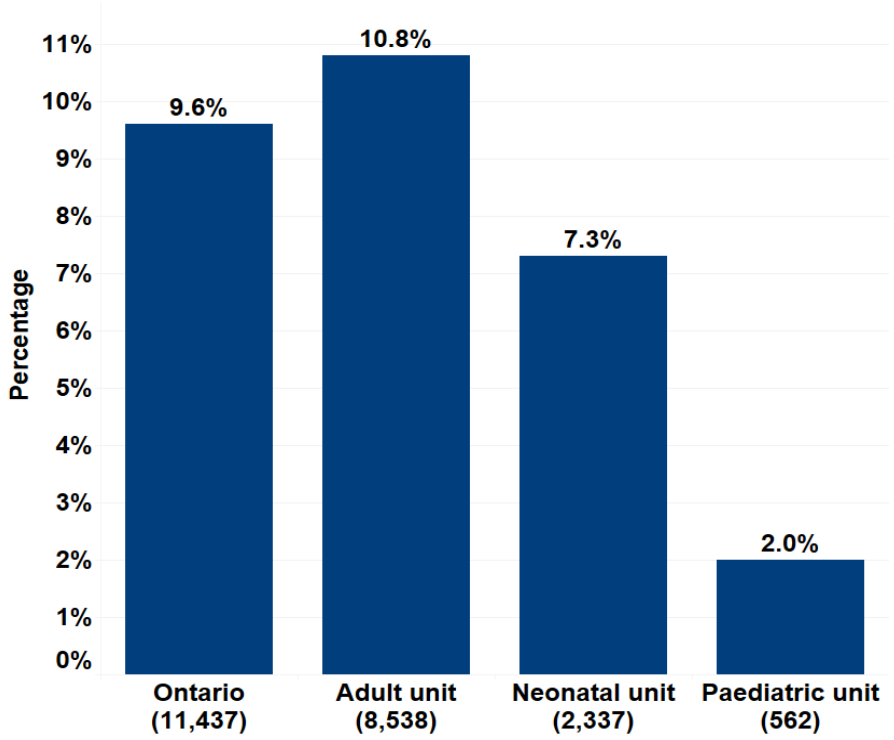
Figure 29: Percent of Internationally Trained Critical Care Nurses, Trend Over Time



Source: 2017/18 CCWP Online Data Collection Tool, Question 11
N = Number of nurses

Figure 30 highlights differences in the proportion of internationally trained critical care nurses across unit types. Adult critical care units reported the highest proportion of internationally trained nurses at 10.8%. Paediatric critical care units reported the lowest percentage of internationally trained critical care nurses with only 2.0% of their workforce falling into this category.

Figure 30: Percent of Internationally Trained Critical Care Nurses, by Unit Type



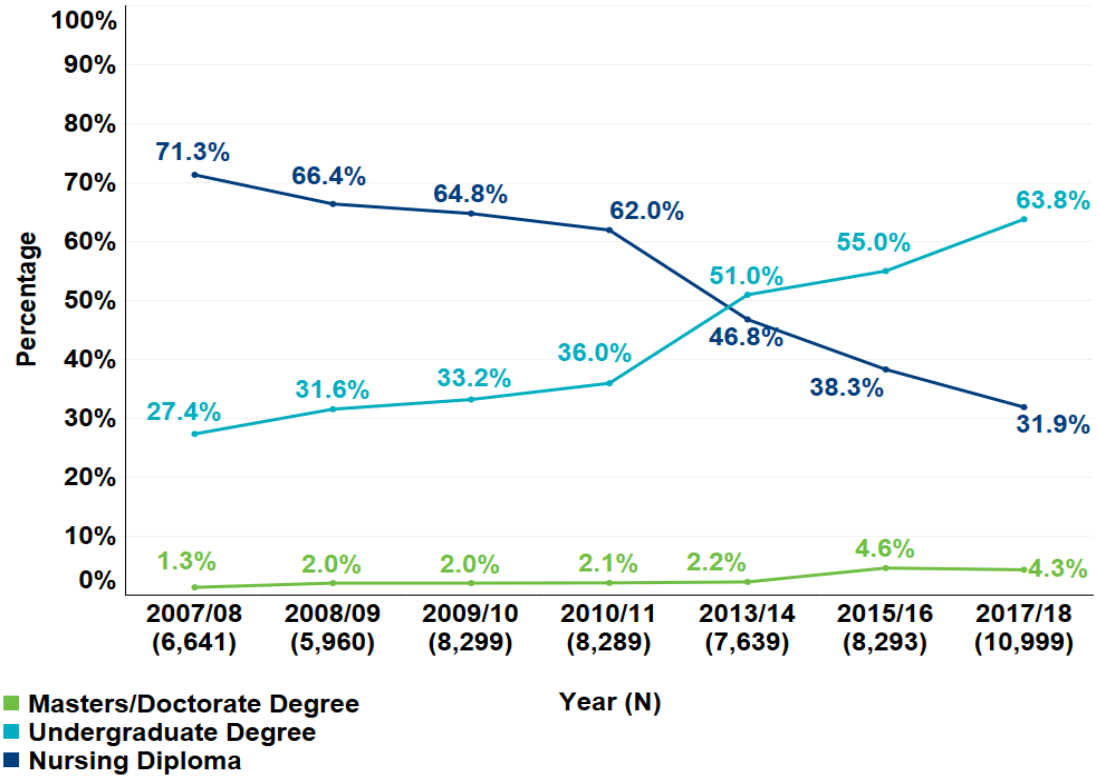
Source: 2017/18 CCWP Online Data Collection Tool, Question 11
N = Number of nurses

5.2 Educational Attainment

In 2000, based on the recommendations from the Nursing Task Force, the Provincial Government of Ontario legislated that all new nurses entering the nursing profession must hold a baccalaureate degree in nursing, effective in 2005 ("Workforce Profile of Registered Nurses in Canada," 2010).

When examining the education level of critical care nurses, the data in Figure 31 shows that, the proportion of RNs with diplomas has decreased since 2007 from 71.3% to 31.9% in 2017 while critical care nurses with Bachelor of Nursing (BNs) or Baccalaureates has increased from 27.4% in 2007 to 63.8% in 2017.

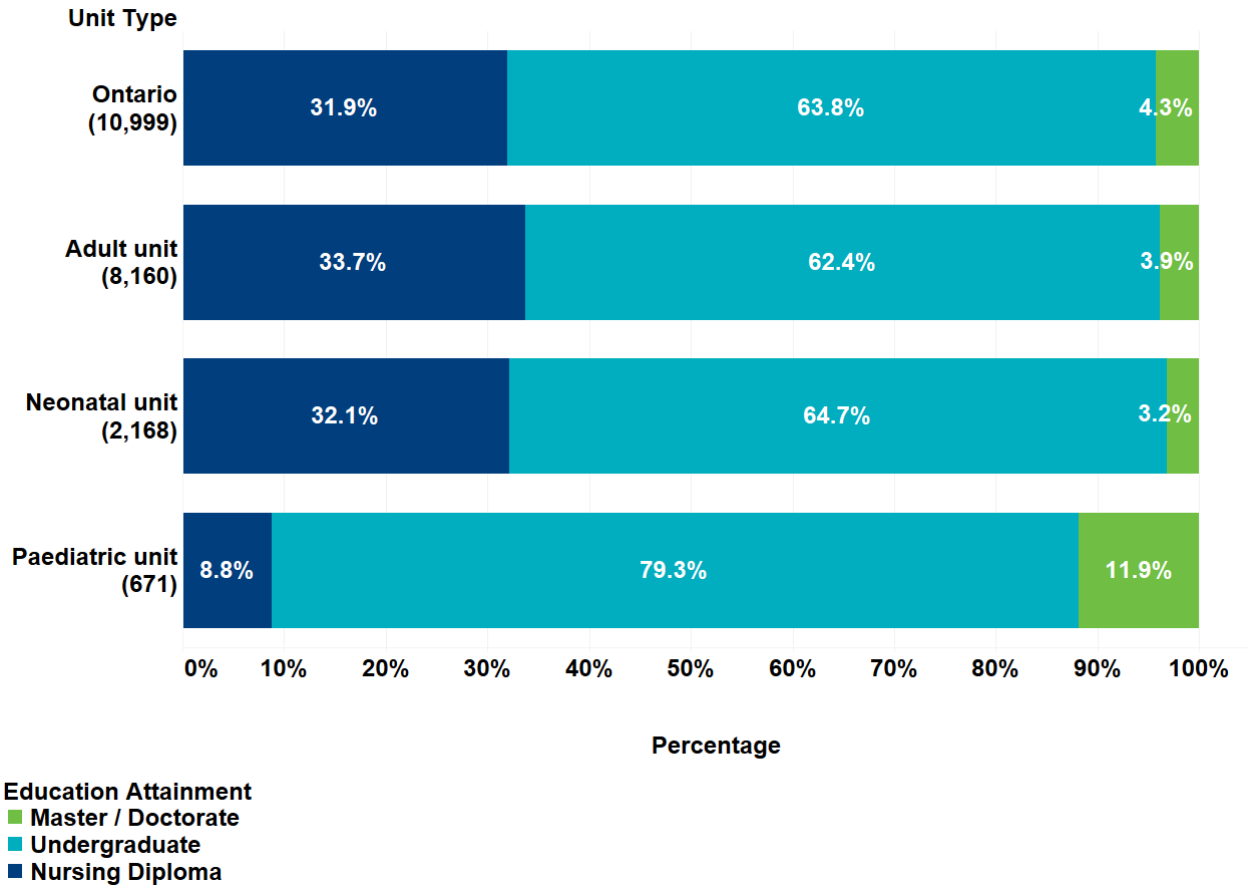
Figure 31: Educational Attainment of Critical Care Nurses, Trend Over Time



Source: 2017/18 CCWP Online Data Collection Tool, Question 10
N = Number of nurses

Figure 32 shows the proportion of critical care nurses with an undergraduate nursing degree across unit types. The results are similar for adult and neonatal units with just under two-thirds of staff with bachelor level degrees. Paediatric critical care units reported the highest percentage of nurses with a baccalaureate degree (79.3%) as well as the highest proportion with post-graduate degrees (almost 12%). This high proportion of undergraduate degrees in paediatric units may reflect the younger cohort employed in paediatric units. This trend has been consistent over the last several years.

Figure 32: Educational Attainment of Critical Care Nurses, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 10
N = Number of nurses

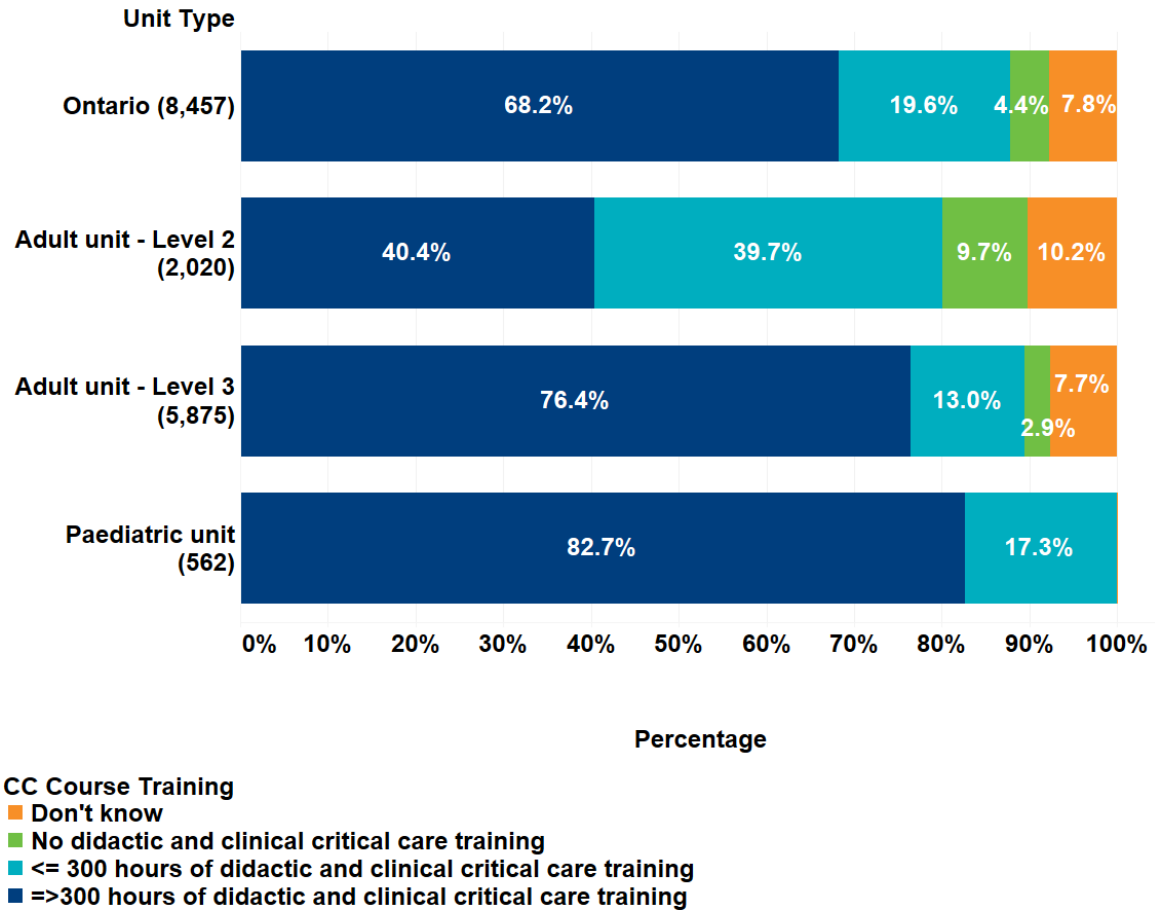
5.3 Specialized Critical Care Training

Nurses provide specialized, complex, and intensive care that is enabled by ongoing training and experience. This is particularly relevant in critical care where the recruitment and retention of a skilled and specialized nursing labour force have been identified as an important Health Human Resource (HHR) priority (Siela, 2008; Stechmiller, 2002).

The Ministry of Health and Long-Term Care's 2005 Critical Care Strategy identified Health Human Resource planning as an essential factor in the delivery of critical care services, particularly focusing on the training, recruitment, and retention of critical care nurses. To support this strategy, in 2006/07, the Ministry announced the annual Nurse Training Fund, a $4.5M initiative designed to assist hospitals with the costs of training critical care nurses. The Critical Care Nurse Training Fund requires training to be completed through an in-house and/or college-based adult and/or paediatric critical care program that is at a minimum 300 didactic and clinical training hours for nurses new to critical care ("Nurse Training Fund: Funding Analysis Report," 2013). To align with these provincial standards regarding a minimum requirement of critical care training hours, the CCWP collected data on the total number of RNs on the unit who had completed 300 (or more) didactic and clinical critical care training hours. In the 2017/18 CCWP survey, adult and paediatric units were asked to identify the amount of critical care training their nursing staff had completed.

Figure 33 demonstrates that there is some variability for the amount of training that critical care nurses across adult and paediatric units in Ontario have received. Provincially 68% of critical care nurses have over 300 hours of critical care training (excluding neonatal units). The highest percentage of nurses meeting the 300 hour threshold was reported by the paediatric critical care units at 82.7%. Provincially, a very small percentage (4.4%) of nurses were reported as not having completed any specialized critical care training. Neonatal critical care nurses were not asked to report on their training attainment, as work is currently underway to understand the training requirements and develop a standard of training for nursing in neonatal critical care units.

Figure 33: Critical Care Training Attainment of Critical Care Nurses, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 15 and 19
N = Number of nurses

5.4 Life Support Training

The CCWP survey contained questions about staff training for resuscitation and life support across all unit types (adult, paediatric, and neonatal critical care units). The presence of these training certifications for critical care nurses is described in the sections below.

In adult units, Advanced Cardiac Life Support (ACLS) training is intended for healthcare professionals responding to cardiopulmonary emergencies and working in adult critical care environments. This training is appropriate for team members within critical care such as physicians, nurses, and respiratory technologists ("Advanced Cardiac Life Support (ACLS)," 2017).

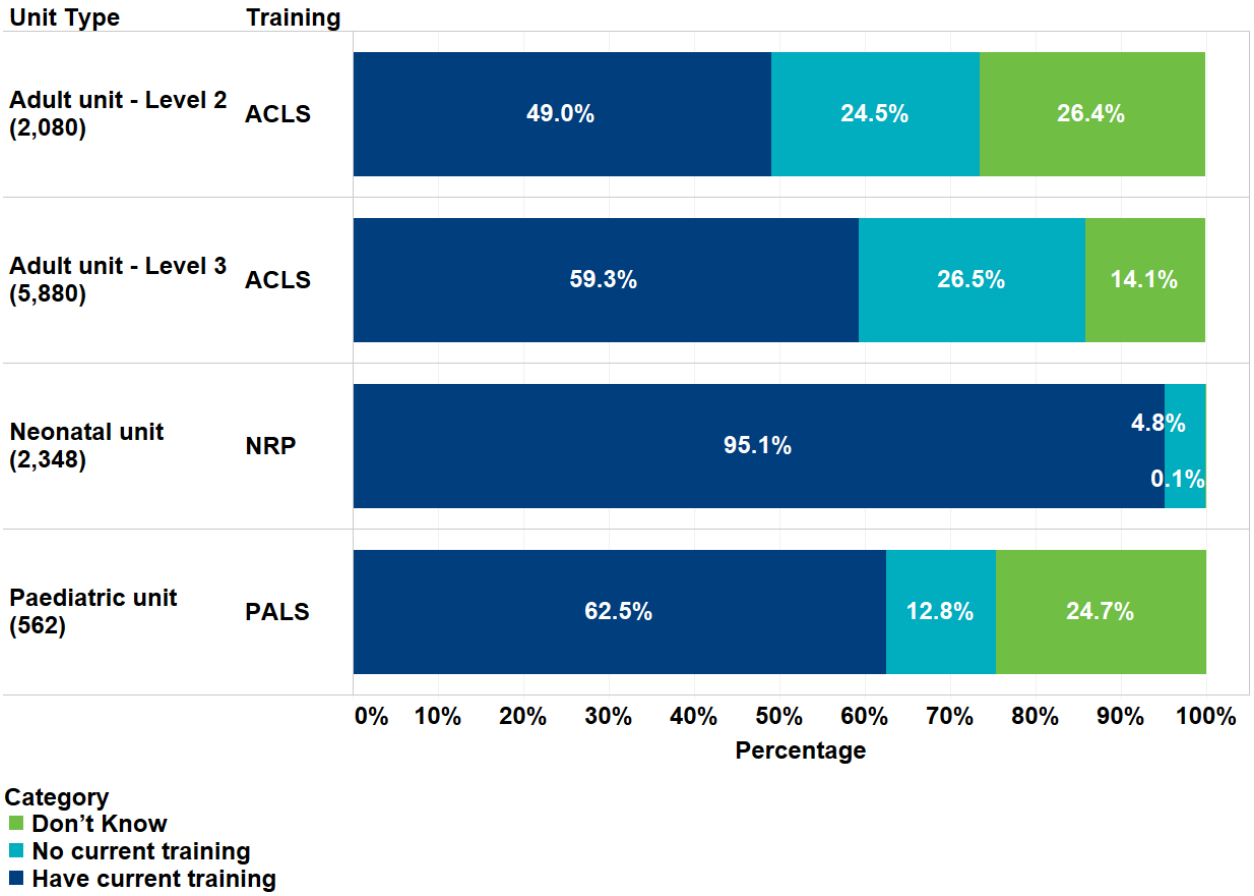
The Neonatal Resuscitation Program (NRP) is an educational program that introduces the concepts and skills of neonatal resuscitation. It is designed to teach individuals and teams that may be required to resuscitate newborn babies. (Canadian Paediatric Society, 2018).

The Pediatric Advanced Life Support (PALS) Provider Course is designed for healthcare providers who either direct or participate in the management of respiratory and/or cardiovascular emergencies and cardiopulmonary arrest in pediatric patients ("Pediatric Advanced Life Support (PALS)," 2017).

As shown in Figure 34 from the 2017/18 CCWP survey,

- Almost half (49%) of the nurses in Level 2 adult critical care units across Ontario have received ACLS training in the last two years while close to 60% of nurses in Level 3 units have received this training.
- Neonatal critical care units reported the highest level of participation for ensuring current specialized training (NRP) at 95.1%.
- Almost two-thirds (62.5%) of nurses in paediatric critical care units have completed PALS training within the last two years. For almost another quarter, of these nurses in paediatric units, their PALS training status is unknown.

Figure 34: Specialized Training of Critical Care Nurses, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 14, 18 and 23
N = Number of nurses

5.5 Professional Development Investments

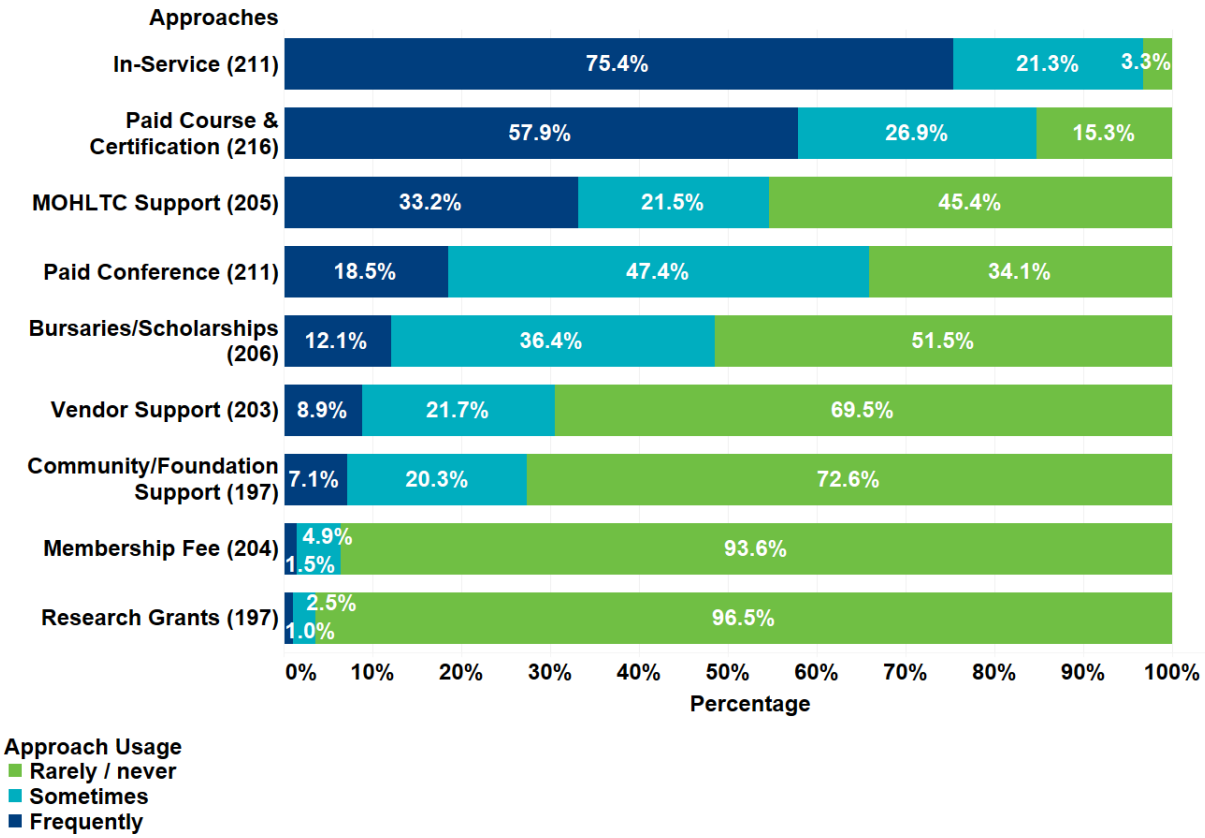
Studies have found that RNs who believe their organizations are interested in making investments in their development will be more likely to stay with their employer, even when market conditions facilitate movement between jobs, and other employers highly value their skills and competencies (Rondeau, 2009).

The CCWP survey collected data on professional development support provided to nurses by critical care units. Survey respondents (nurse managers) were asked to identify how frequently different approaches to professional development are used on their units. This section displays the different options of professional development within critical care units in Ontario that were included in the survey, and the frequency with which they are used.

As shown in Figure 35 the most common form of professional development support offered by units across the province was "In-service", frequently used by 75% of critical care units. Meanwhile, payment of "Membership Fees" or providing "Research Grants" were the least used method only being used by 1.5% and 1% of all units across the province.

"In-services" during work hours, "Paid courses and Certifications", and "MOHLTC Support" are further analyzed below by unit type in the sections.

Figure 35: Approaches to Professional Development Investment in Critical Care Units, Provincial

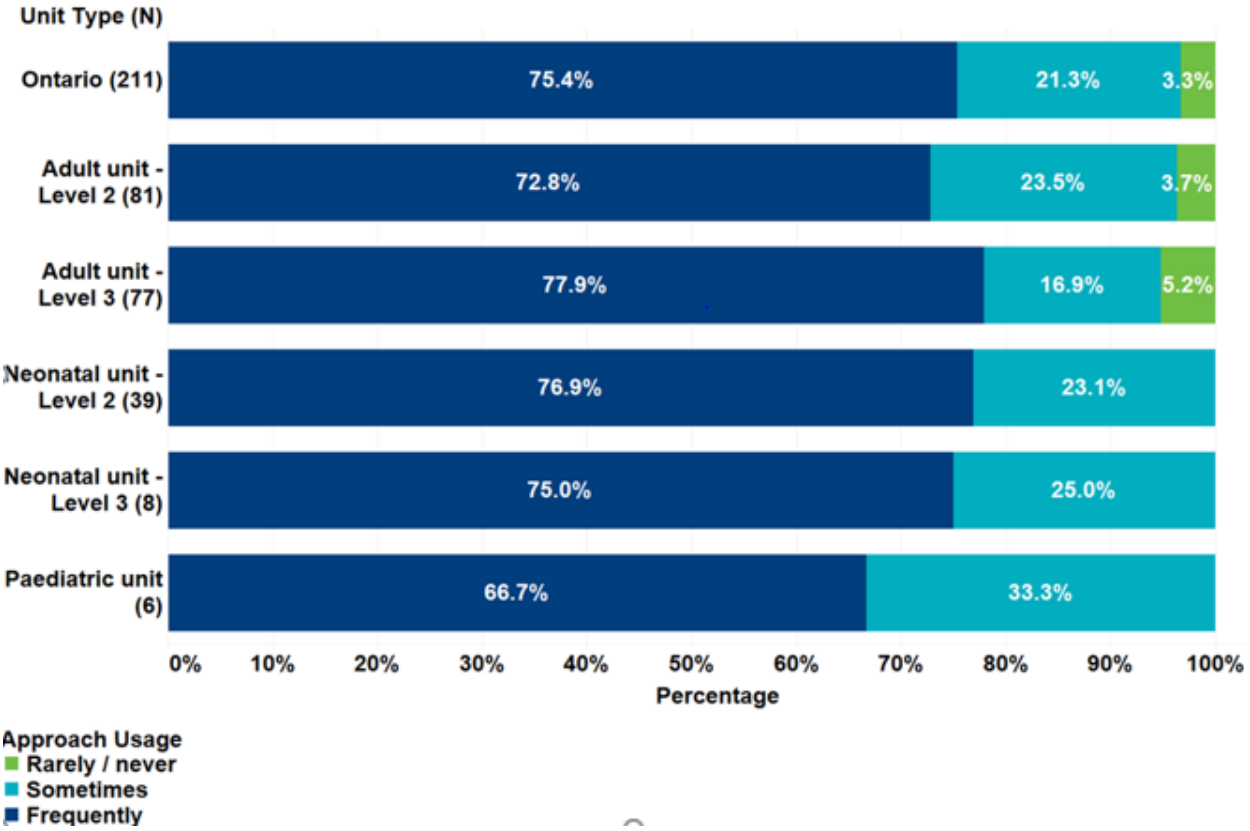


Source: 2017/18 CCWP Online Data Collection Tool, Question 35
N = Number of units

5.5.1 In-services

As shown in Figure 36, “In-Services” professional development during work hours is a frequently used strategy among all unit types. Peadiatric Units reported using “In-Service” somewhat less frequently than other unit types (66.7%) compared to 75% to 76% of the time in adult and neonatal units.

Figure 36: Use of "In-Services" for Professional Development in Critical Care Units, by Unit Type

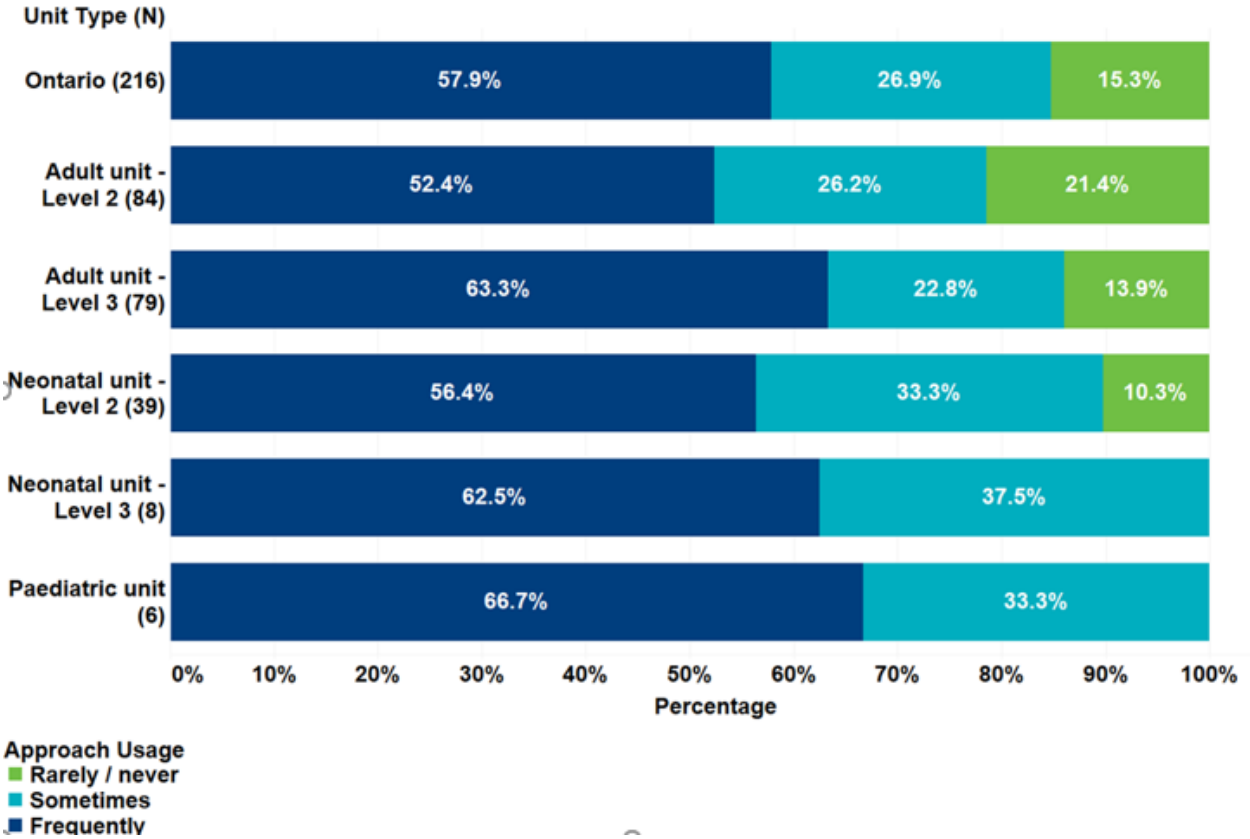


Source: 2017/18 CCWP Online Data Collection Tool, Question 35
N = Number of units

5.5.2 Paid Courses and Certificates

Figure 37 shows that support for "Paid Courses and Certificates" seem to be used frequently (by more than 50% of units) across all unit types. Paediatric critical care units reported using "Paid Courses and Certificates" more frequently (66.7%) than other unit types.

Figure 37: Use of "Paid Courses and Certificates" for Professional Development in Critical Care Units, by Unit Type

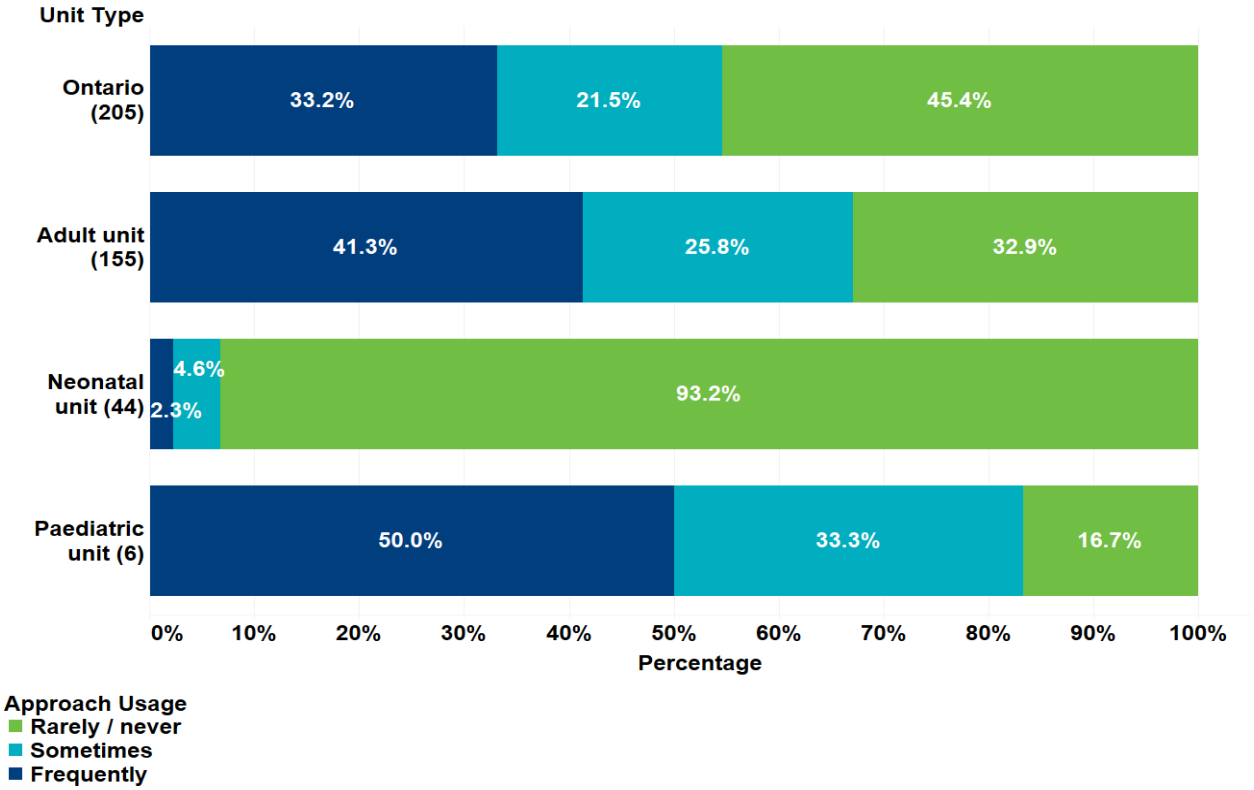


Source: 2017/18 CCWP Online Data Collection Tool, Question 35
N = Number of units

5.5.3 Ministry of Health and Long-Term Care Support

Figure 38 shows that paediatric critical care units use the support from the Ministry of Health and Long-Term Care (MOHLTC) most frequently to support their professional development activities (such as by applying for the Critical Care Nurse Training Fund). In contrast, neonatal critical care units, which have only recently been included in CCSO's mandate (Fall 2017), reported rarely (93.2%) using "MOHLTC Support" to support professional development.

Figure 38: Use of "MOHLTC Support" for Professional Development in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 35
N = Number of units

6. Nursing Turnover

Employee turnover is defined as the ratio of the number of workers that had to be replaced in a given time period to the average number of workers and is generally viewed as the movement of staff out of an organization (Nursing Research Practice, 2014). Turnover is also an important Health Human Resource (HHR) measure associated with high costs and increased risks to patient safety (Hayes, 2012). The largest contributions to direct costs were incurred through temporary replacements, and the largest indirect costs were due to decreased initial productivity of the new hire. Reasons for high nursing turnover have been associated with lower job satisfaction, as well as being a result of role ambiguity and role conflict. More importantly, high nursing turnover coupled with greater role ambiguity is also associated with an increased likelihood of medical errors affecting patient satisfaction, patient safety and healthcare associated infections(O'Brien-Pallas, 2010).

6.1 Scope of Nursing Turnover Analysis

In the CCWP survey, units were asked about employee exits and turnover with data from three different sources, as identified in the table below.

Table 6: Data Collection Tools for Nursing Turnover Capture

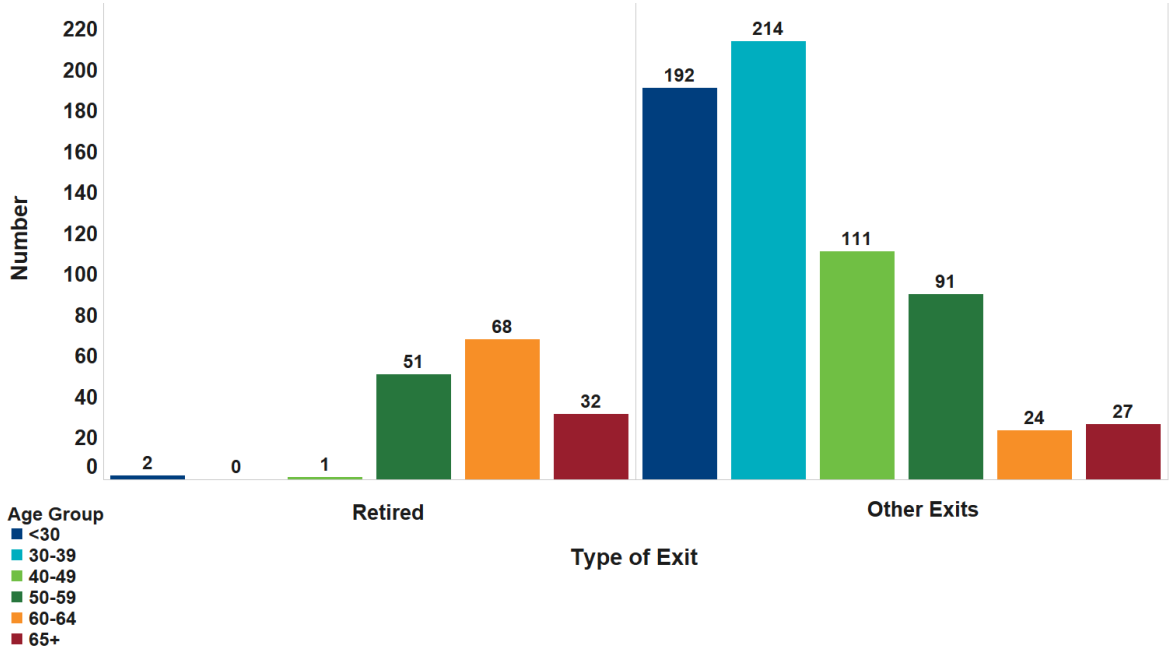
Data Collection Tool	Scope of Information Collected	Number of Exits Captured
Finance department submission	The number of nurses that left the organization capturing employment status (bedside RNs only).	310 exits from 215 units
Human Resources submission	*The number of nurses who left the organization* (includes information for direct care nurses) • Captured information on age group, gender, and employment status of nurses leaving • Captures information separately for retirements vs. other exits (voluntary and involuntary combined) • Captures information on tenure within the organization	814 exits from 180 units
Online data submission	*Total number of bedside nurses who left the unit*. • Where known, collected information on reasons for exits and destination of staff exiting.	1,074 exits from 218 units

Due to the low volume of exits reported through the finance data submission, these results will not be presented in this report. The information available through the Human Resources data submission as well as the online data submission is discussed in the sections that follow. The reader is encouraged to be mindful of the data source for the findings below, as the number of exits represented may differ across pieces of analysis.

6.2 Separations by Age Group

From the data collected in the 2017/18 CCWP survey, a number of different views on employee separations were possible. Starting with the distribution of employee exits by age group in Figure 39 the results indicate there are higher volumes of exits from younger age groups, with the most number of nurse exits in the 30-39 age group. As well, this graph shows the age distribution of nurses retiring. The greatest number of nurses retiring is in the 60-64 age group, although there are also a large number of retirements in the 50-59 age group and over 65 age group.

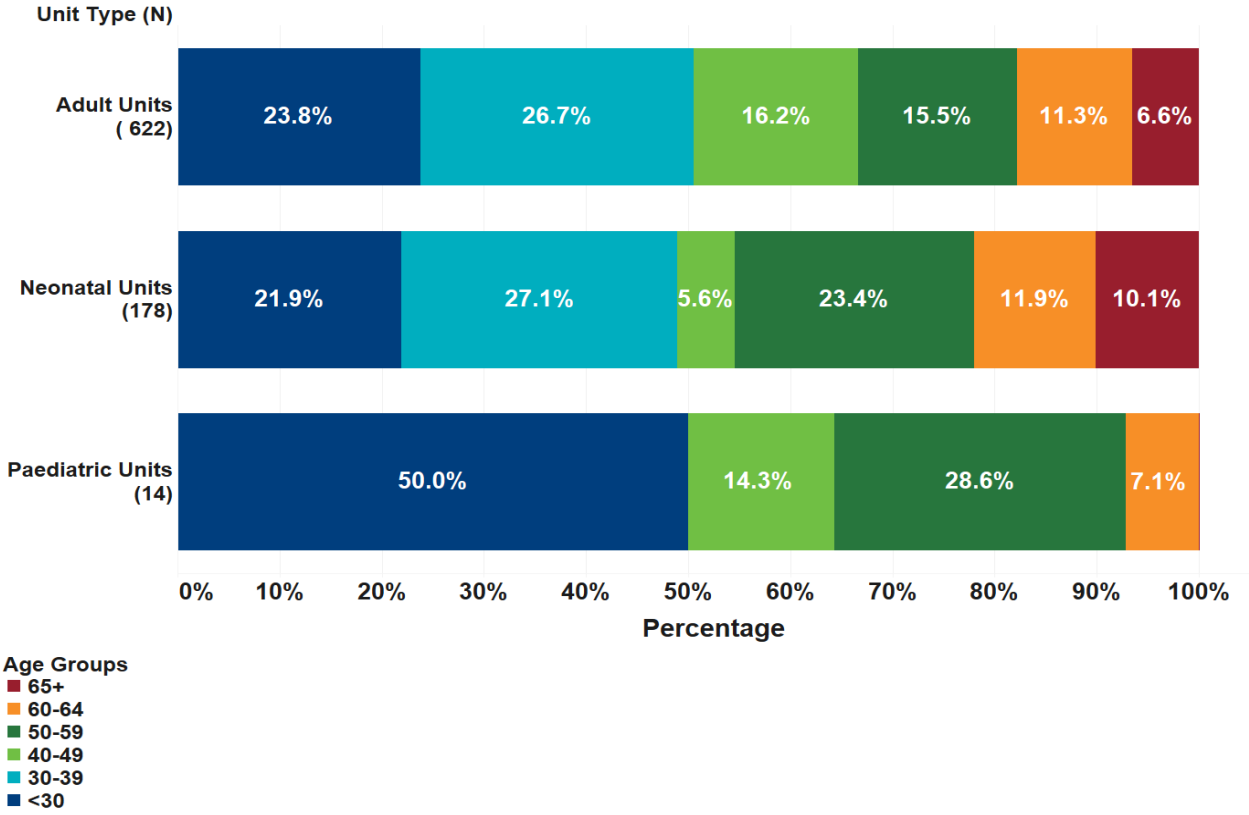
Figure 39: Critical Care Nurse Exits from the Organization, by Category and Age Group, Provincial



Source: 2017/18 CCWP Human Resources Data Collection Tool, Direct Care Nurses
N = 180 units with 814 exits

Figure 40 provides a summary of the nursing exits by age group by unit type. The distribution of employee exits is relatively similar among the adult and neonatal critical care units at approximately 23% in the <30 age group and the 30-39 age group where the highest percentage of nursing exits occur (more than one-quarter of all exits are from this age group). Paediatric units, which saw 14 exits in total, had half of these exits from the under 30-age group.

Figure 40: Critical Care Nurse Exits from the Organization, by Age Group and Unit Type

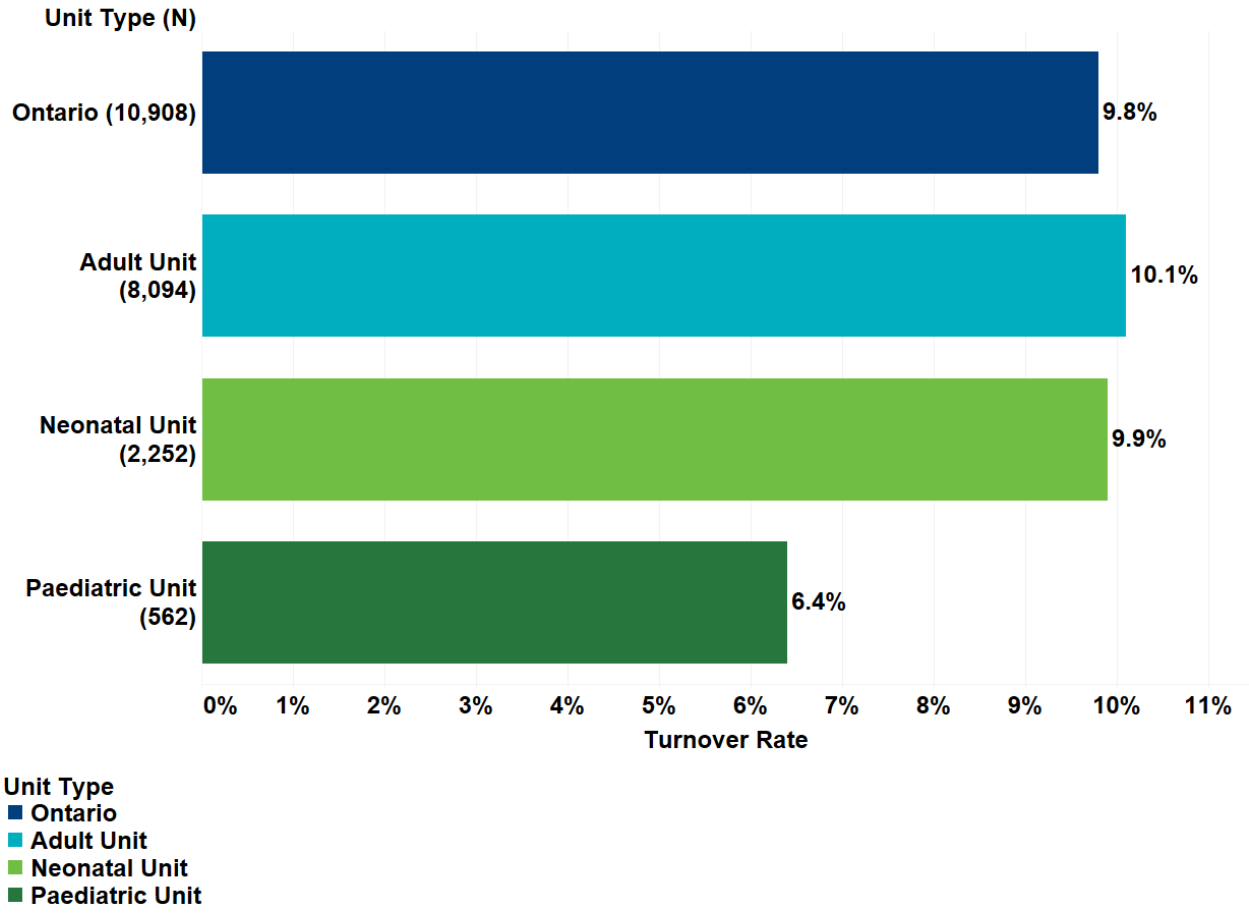


Source: 2017/18 CCWP Human Resources Data Collection Tool, Direct Care Nurses
N = Number of exits.

6.3 Employee Turnover

To examine the overall nursing turnover rate, information was taken from the online survey responses. With this view, the overall nursing turnover rate for nurses leaving critical care units provincially was around 10% for both adult and neonatal units, with a lower turnover rate of 6.4% reported for paediatric units. These results are displayed in Figure 41 below.

Figure 41: Critical Care Nurse Turnover from the Unit, by Unit Type

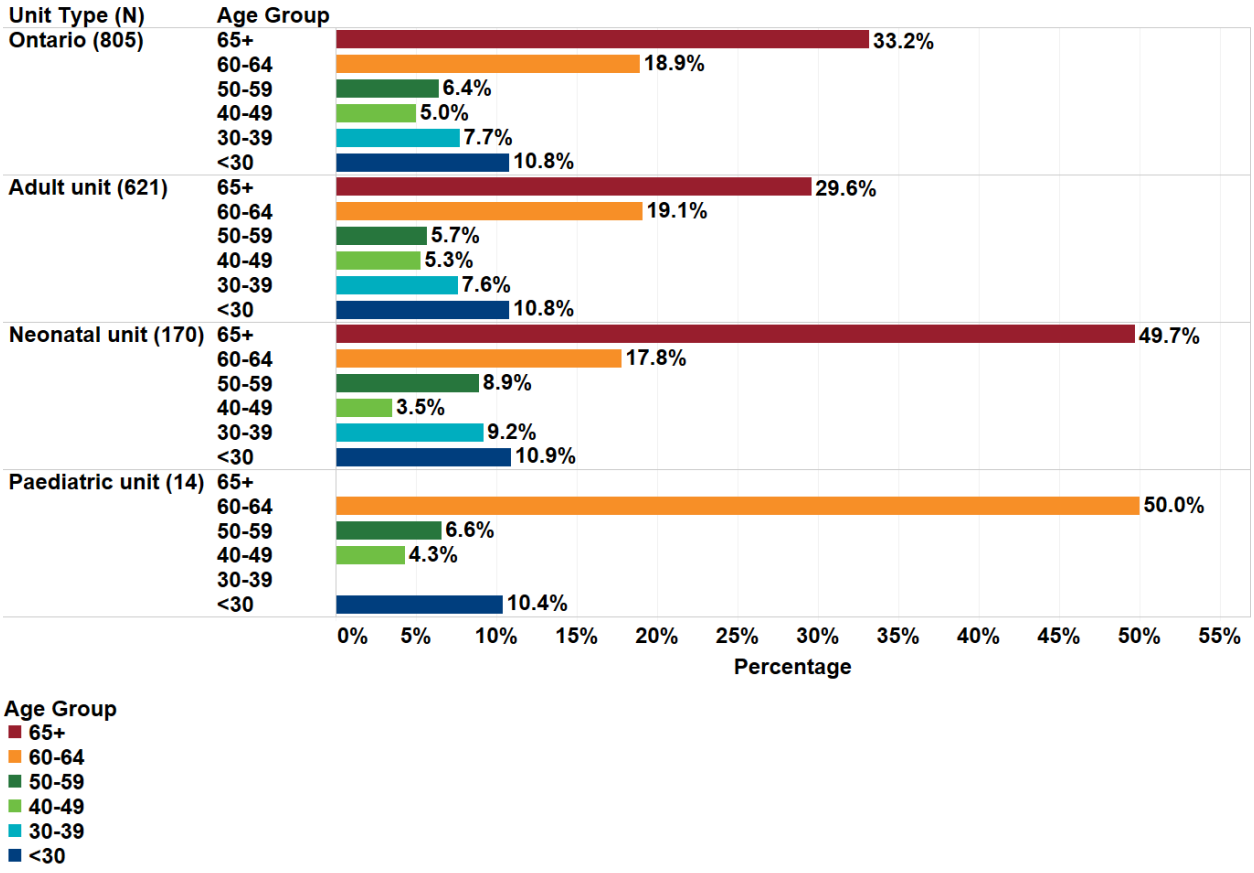


Source: 2017/18 CCWP Online Data Collection Tool, Question 5 and 24
N = Number of nurses

To understand nursing turnover at a more granular level by age groups, information collected through the Human Resources data submission was analyzed. The data collected from Human Resources departments of hospitals captures information for employees that left the organization, whereas the online data submission provided by nurse managers represents information for nurses who left the unit. The Human Resources data source identified a slightly lower turnover rate overall, as compared to the online survey data, however, does allow the opportunity to understand directional differences for turnover by age groups.

Figure 42 identifies that the nursing turnover is higher in the older age groups as would be anticipated with retirements. Another age group with higher turnover is the under 30 group. Turnover rates between unit types are relatively consistent among the age groupings.

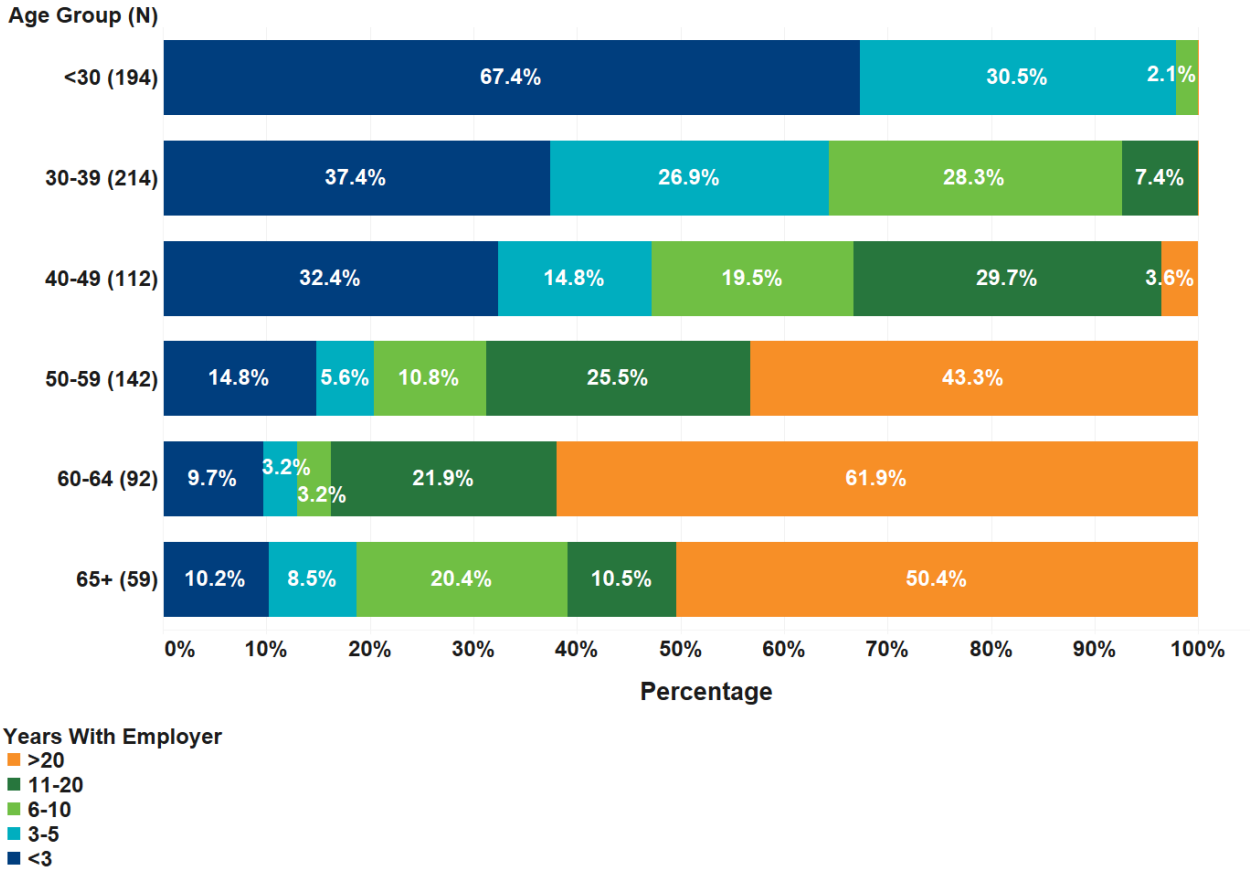
Figure 42: Critical Care Nurse Turnover from the Organization, by Age Group and Unit Type



Source: 2017/18 CCWP Human Resources Data Collection Tool, Direct Care Nurses
N = Number of exits

In Figure 43, an analysis was undertaken to examine the tenure of nursing staff leaving their employers. Those who stayed less than 3 years with an employer are the largest group exiting (67.4%) from those under 30 years old. What is also striking, however, is that those nurses with less than 3 years with an organization are also the largest groups leaving for the 30 to 39 age group and the 40 to 49 age group as well. This might suggest a need to focus on employee retention for those new to the organization, across all age groups.

Figure 43: Critical Care Nurse Exits from the Organization, by Age Group and Tenure with Employer



Source: 2017/18 CCWP Human Resources Data Collection Tool, Direct Care Nurses
N = Number of exits

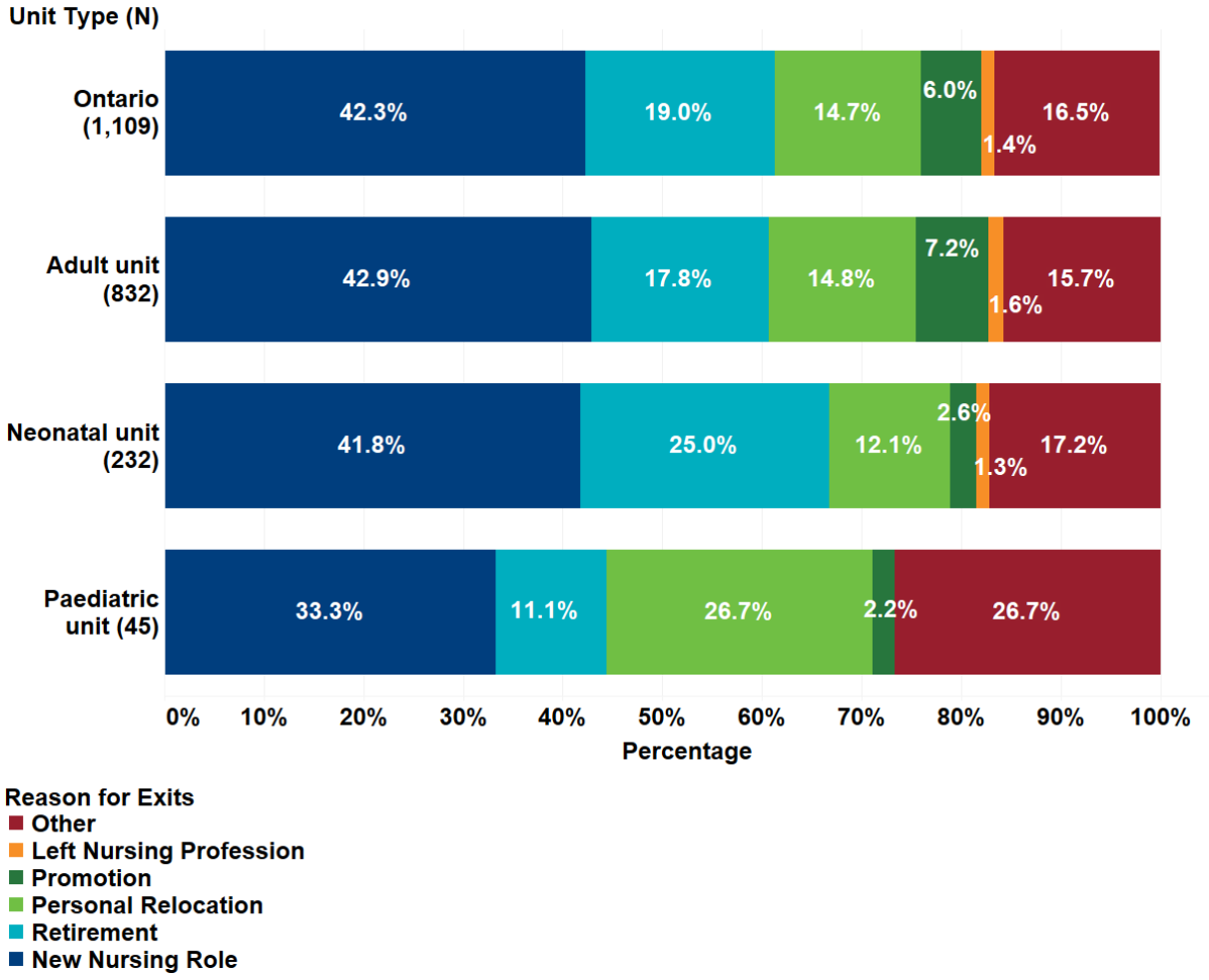
6.4 Details of Nurses Leaving Critical Care Units

Information on reasons for nursing exits from the unit was captured in the online survey data collection tool. This information on reasons for exits was collected based on nurse managers' knowledge of reasons for a nurse leaving the unit. As well, this data is inclusive of nurses who left the unit but may not have left the organization.

6.4.1 Reasons for Exits

Nurse Managers were asked to identify the reasons for exits for those nurses leaving the unit based on a pre-determined list of response options. The most common reason for leaving the unit was to move to a new nursing role (over 40% of exits), followed by retirements (almost 20% of exits) and personal relocations (almost 15% of exits). The analysis is presented by unit type in Figure 44 below.

Figure 44: Reasons for Critical Care Nurse Exits from the Unit, by Unit Type

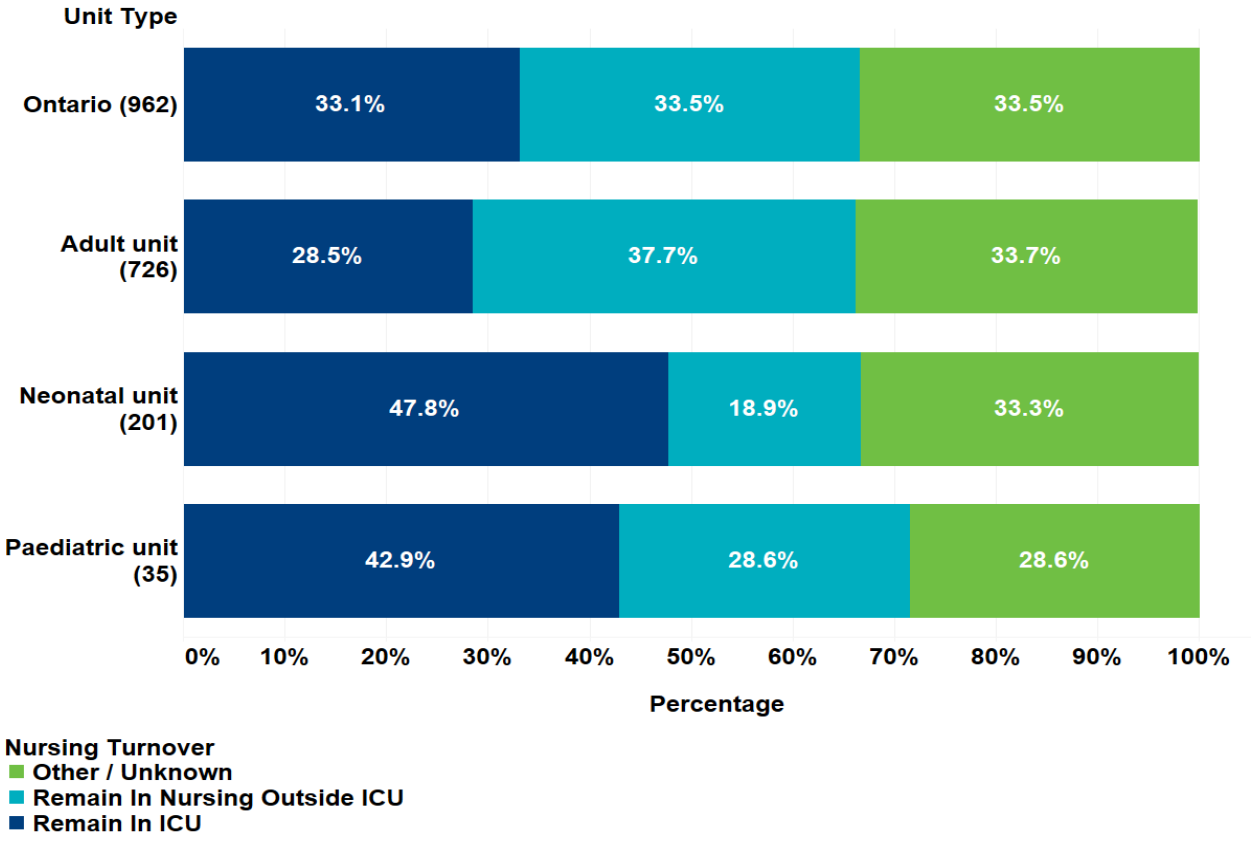


Source: 2017/18 CCWP Online Data Collection Tool Question 26
N = Number of nurses

6.4.2 Destination of Exits

Figure 45 shows information on the destination of critical care nurses leaving the unit, by unit type. This analysis shows that nursing staff leaving neonatal critical care units appear to be the largest group of nurses that continue working in critical care at 47.8%. Paediatric critical care units appear to have a similarly high proportion (42.9%) of nurses that leave a unit but remain in working in critical care. Nurses in adult critical care units are less likely to be retained in critical care when they leave the unit, although two-thirds remain in either critical care or nursing more broadly, with the destination of the last third being unknown or other.

Figure 45: Nursing Destinations for Critical Care Nurses Leaving the Unit, by Unit Type

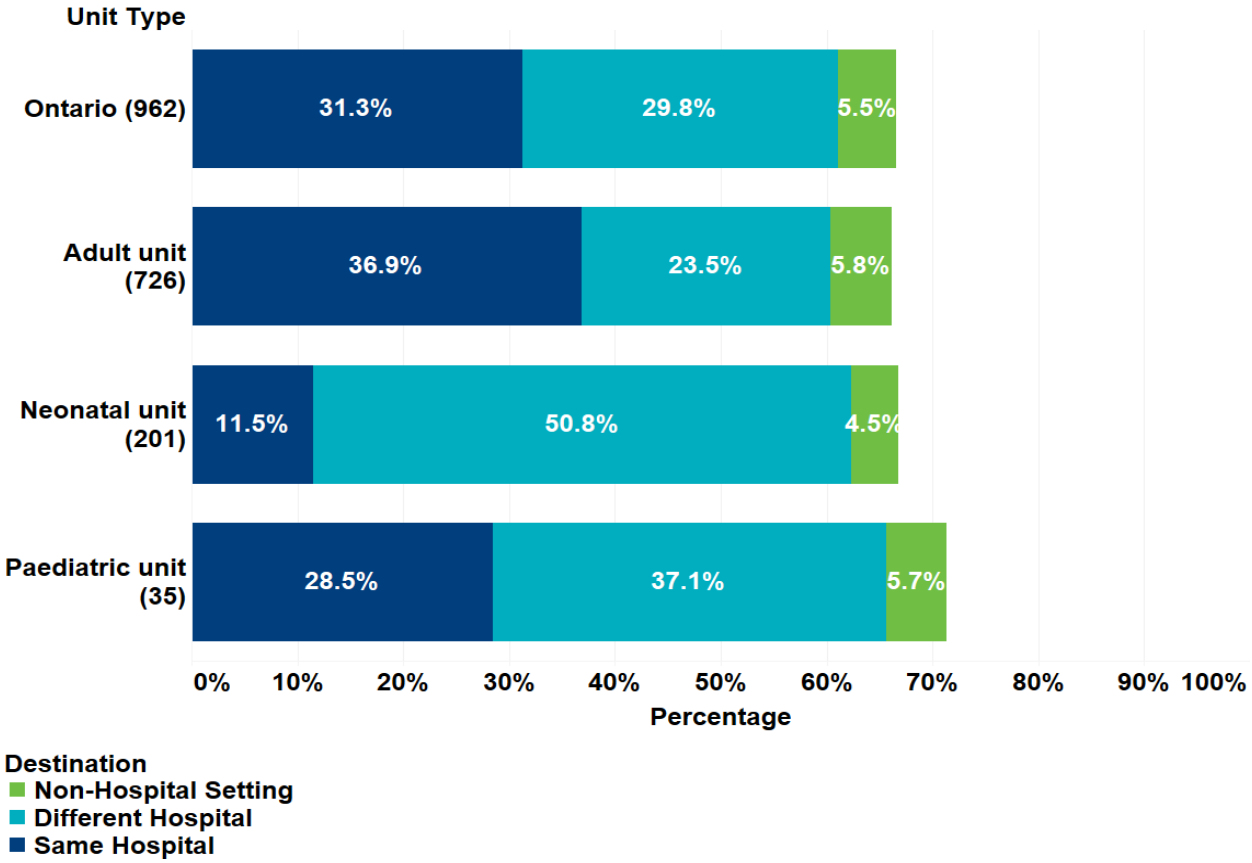


Source: 2017/18 CCWP Online Data Collection Tool, Question 27
N = Number of nurses

Additional information was collected on the care setting for nurses leaving the unit who remained in nursing (the first two categories above in Figure 45). Figure 46 shows the care setting information for critical care nurses who remain in nursing, by unit type. As this is a subset of information from Figure 45, the information does not sum to 100%.

Across unit types, most nurses leaving critical care units move to different hospitals to assume new nursing positions. Neonatal critical care units see the largest percentage of nurses (50.8%) moving different hospitals, which is significantly higher than the provincial average of 29.8%.

Figure 46: Care Setting for Critical Care Nurses Leaving the Unit and Remaining in Nursing, by Unit Type

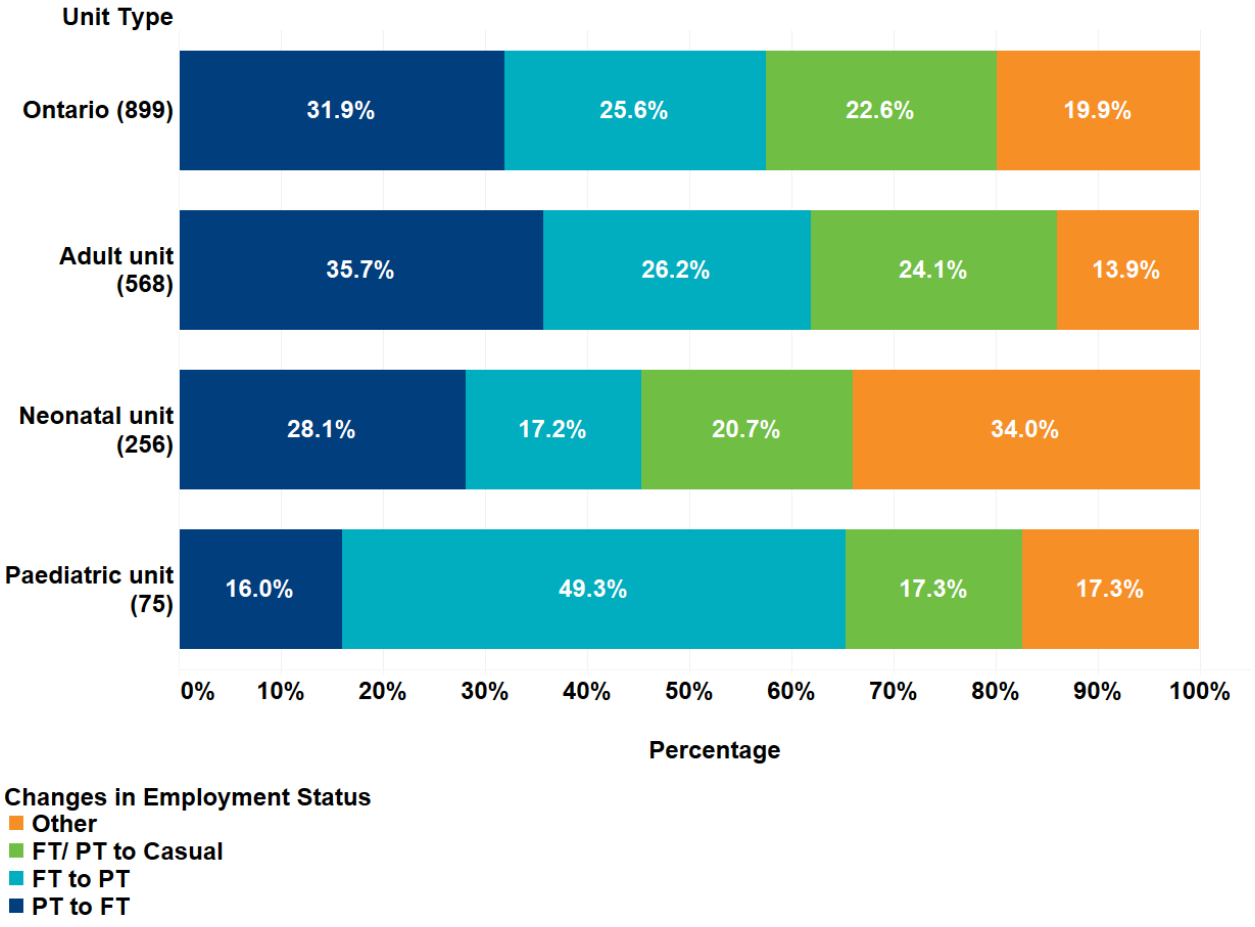


Source: 2017/18 CCWP Online Data Collection Tool, Question 27
N = Number of nurses

6.5 Changes in Employment Status

As part of the online survey data collection, unit managers were asked to identify the changes in employment status for the staff in their units as nurses may wish to change their work commitments over time. Figure 47 shows these transitions of staff to different employment status categories within units. Provincially there are relatively similar proportions of staff moving into full-time (31.9%), part-time (25.6%), and casual (22.6%) roles. Paediatric units showed a somewhat different distribution however with almost half of the staff with changes in employment status moving from full-time to part-time (49.3%). Most instances of staff movement for neonatal units were reported as unknown or other (such as moves from or to temporary assignments).

Figure 47: Changes in Employment Status for Critical Care Nurses, by Unit Type.



Source: 2017/18 CCWP Online Data Collection Tool, Question 31
N = Number of nurses

7. Nursing Recruitment and Retention

The following sections in this chapter will provide an overview of the recruitment feedback captured by critical care units in the 2017/18 CCWP. Where relevant, analysis is presented by unit type breakdown for the following items:

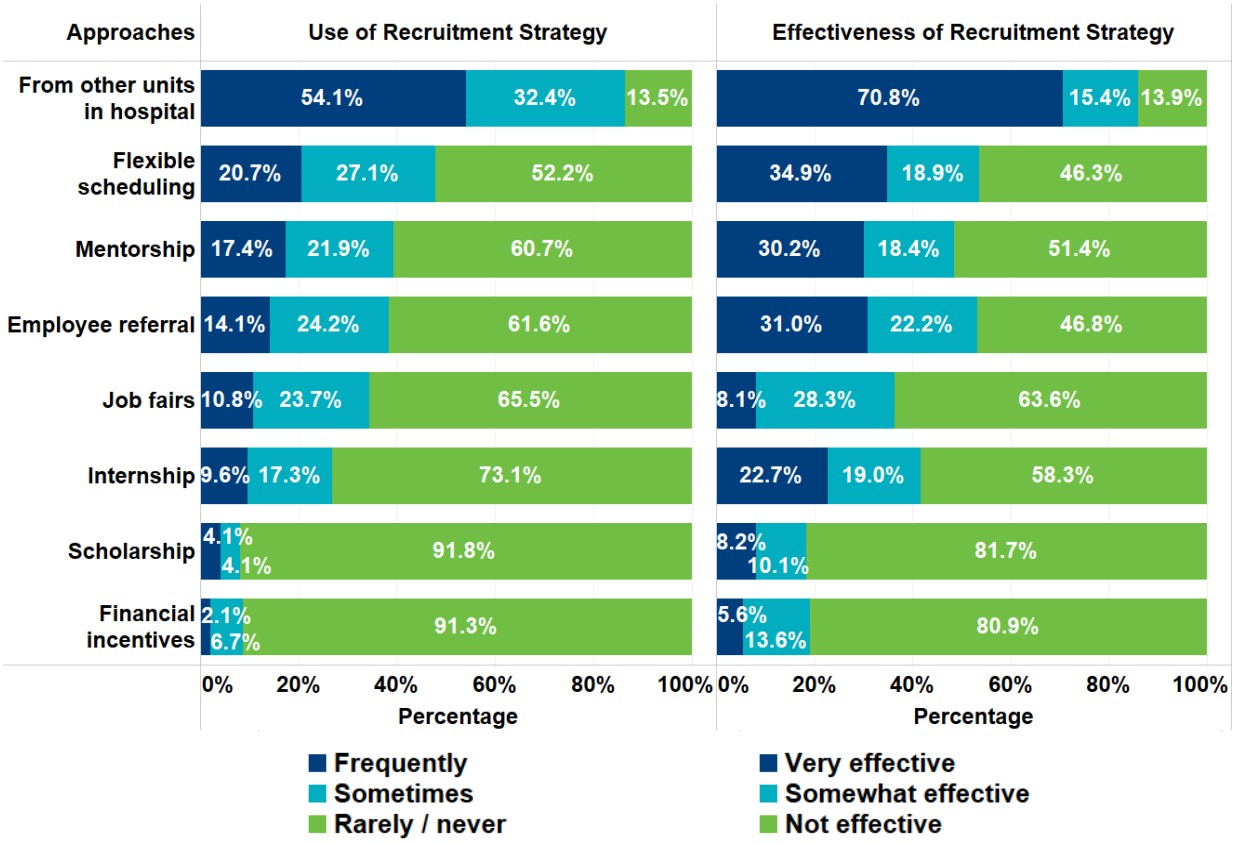
- Recruitment Strategies;
- New Hires;
- Vacancy Rate; and,
- Retention Strategies.

7.1 Recruitment Strategies

Survey respondents were asked to identify the frequency with which they used a number of different recruitment strategies, as well as their perceived usefulness of each strategy. Figure 48 shows that the most commonly used recruitment strategy relies on other units within the hospital to identify candidates to fill roles (frequently used by 54% of units). Other recruitment strategies relied upon include "Flexible Scheduling" (frequently used by 20.7% of units) and "Mentorship" (frequently used by 17.4% of units).

To contrast the reliance on different recruitment strategies, survey respondents were asked to evaluate the perceived effectiveness of recruitment strategies. Perceived effectiveness shows a similar trend to the level of use of each strategy with "Recruitment from Other Units in Hospital" being reported as the most effective strategy used across the province with a total of 70.8% of units reporting this strategy as very effective. The same is true for "Flexible Scheduling" and "Mentorship" whose effectiveness aligns with use.

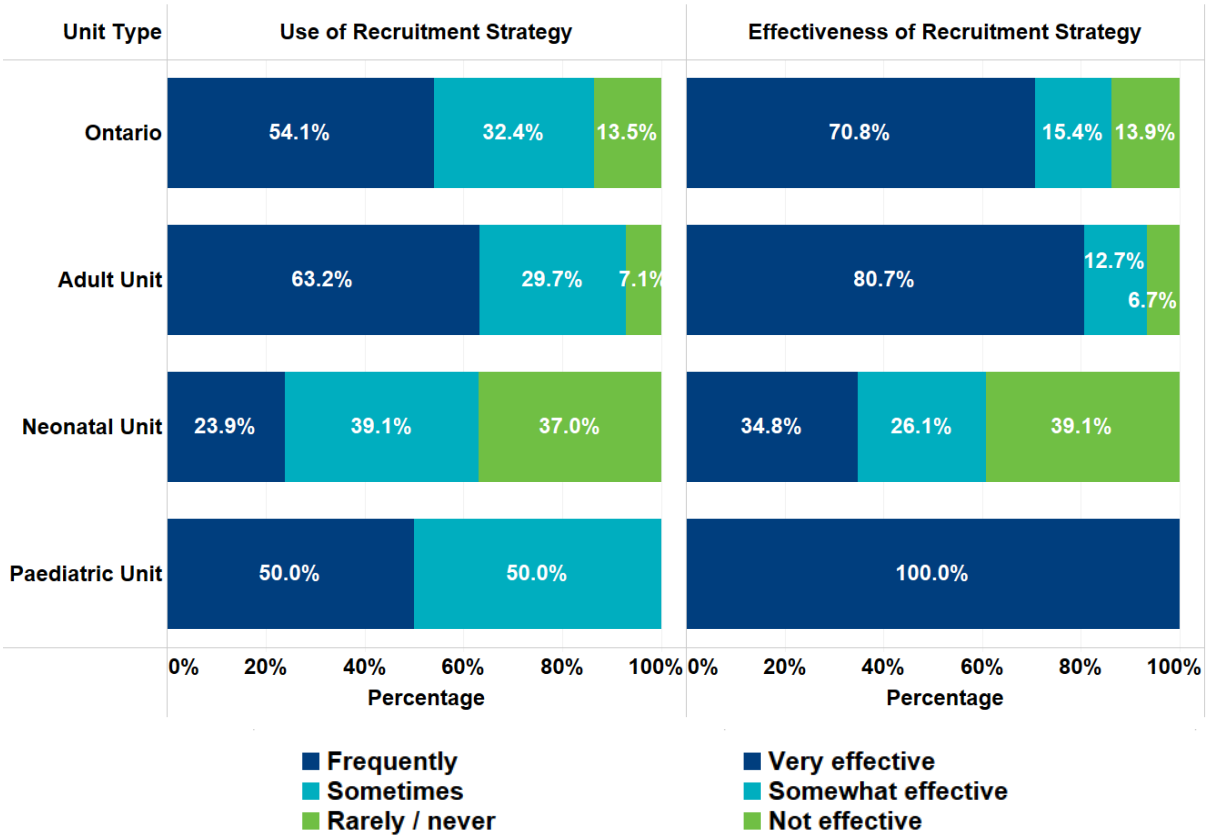
Figure 48: Use and Perceived Effectiveness of Recruitment Strategies, Provincial



Source: 2017/18 CCWP Online Data Collection Tool, Question 36 and 37

To further understand which critical care units are using “Recruitment from Other Units in Hospital” as a method of recruitment, Figure 49 shows the use and effectiveness of this strategy by unit type. “Recruitment from Other Units” is frequently used by 63.2% of adult units and it is found to be very effective by 80.7% of the adult units. In contrast, only 23.9% of neonatal critical care units used “Recruitment from Other Units”, and a similarly low proportion (34.8%) found this strategy to be effective.

Figure 49: Use and Perceived Effectiveness of Recruitment Strategy "Recruiting Internally from Other Units in Hospital", by Unit Type



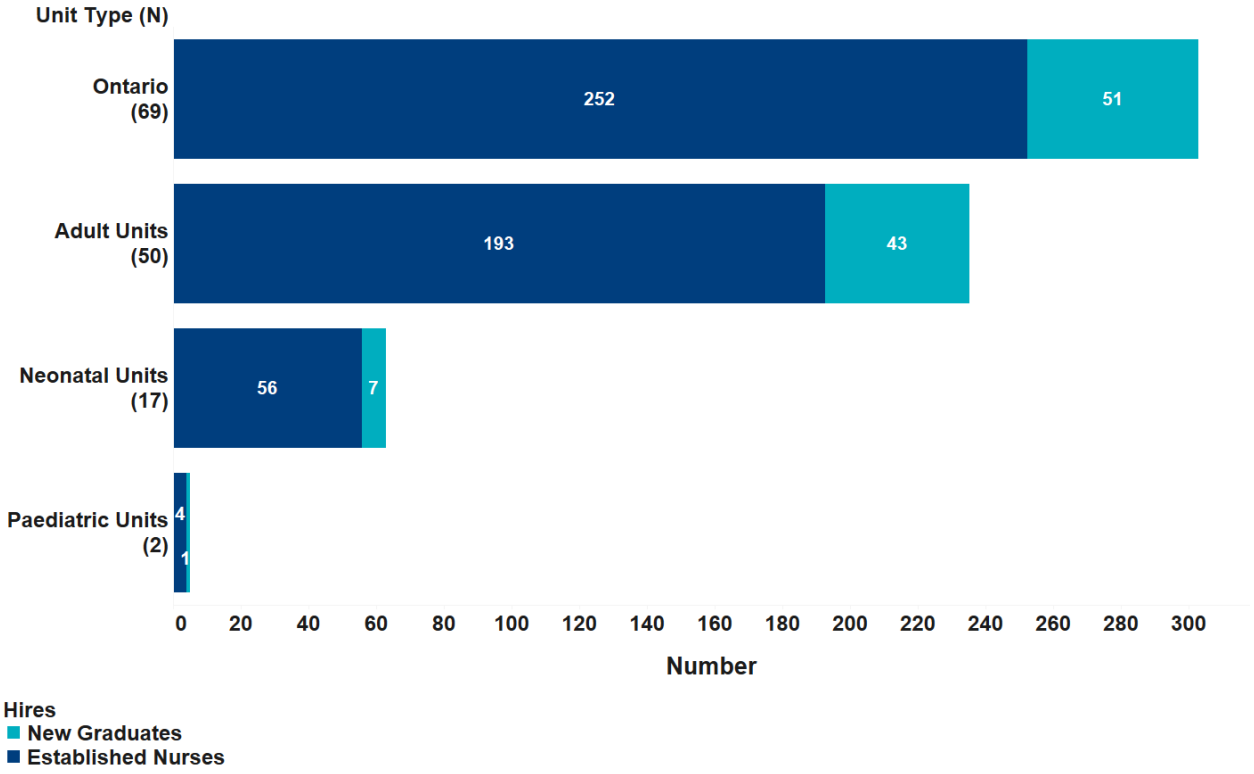
Source: 2017/18 CCWP Online Data Collection Tool, Question 36 and 37
Number of units that responded to question 36 (Use of Recruitment Strategy) = 207
Number of units that responded to question 37 (Effectiveness of Recruitment Strategy) = 202

7.2 New Hires

New graduate RNs are a particularly valuable health human resource, especially when a significant proportion of the overall workforce is entering retirement. A recent study on newly graduated nurses who are in their first two years of practice in Ontario found that empowerment, work engagement, and burnout were significant predictors of job and career satisfaction, as well as turnover intentions (Laschinger, 2012).

Figure 50 shows that almost 17% of new hires are recent graduates (51 of 303 new hires) with most of the recent graduates being hired into adult critical care units (43 of the 51 recent graduates hired).

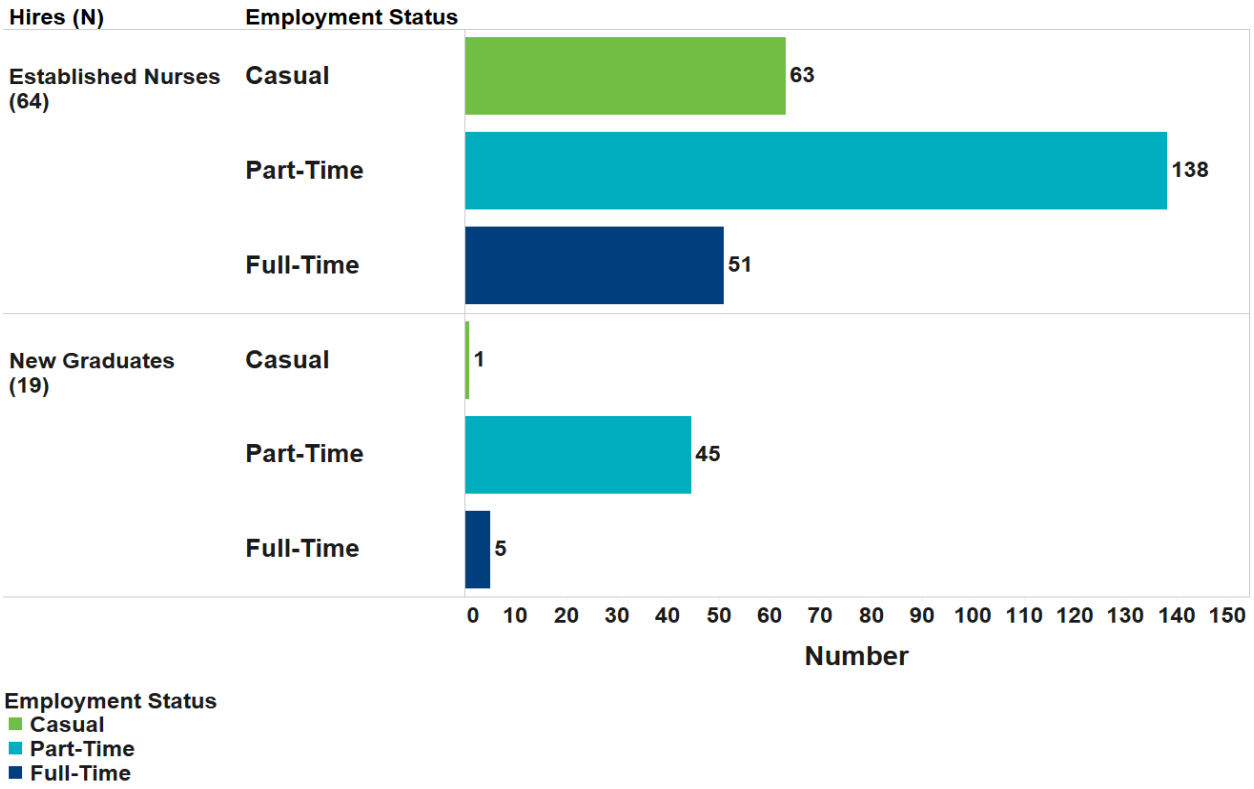
Figure 50: New Critical Care Nurse Hires by Experience Level and Unit Type



Source: 2017/18 CCWP OHRS Data from Finance Department Submission
N = Number of units

Figure 51 highlights that both new graduates and established nurses are more frequently hired on a part-time basis rather than a full-time base in Ontario's critical care units.

Figure 51: New Critical Care Nurse Hires by Unit Type and Category, Provincial



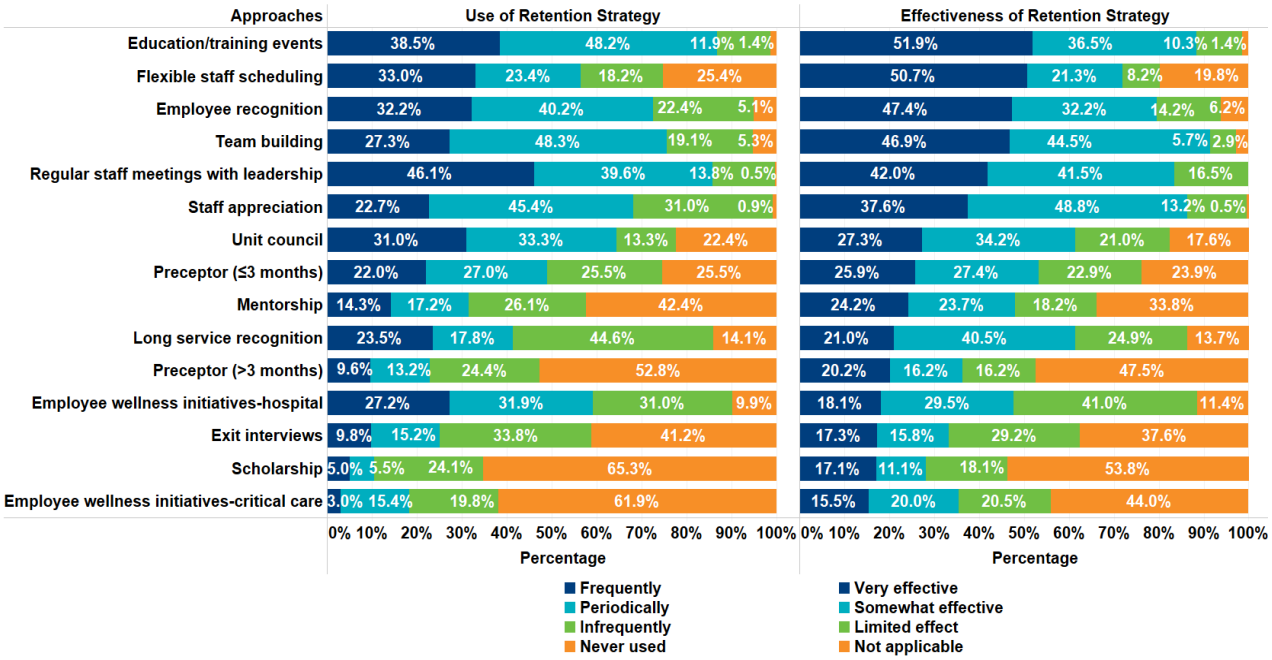
Source: 2017/18 CCWP OHRS Data from Finance Department Submission
N = Number of units

7.3 Retention Strategies

Survey respondents were asked to identify the frequency of use for a number of different retention strategies. As seen in Figure 52, critical care units cite, "Regular Staff Meetings with Leadership" and "Education / Training Events" as the most commonly used retention strategies, frequently and periodically used by over 85% of all critical care units. The third most common retention strategy used was "Team Building", frequently and periodically used by 75.6% of all critical care units.

According to the reported perceived effectiveness of strategies, "Team Building" (91.4%) was reported as the top method (combining the very effective and somewhat effective ratings), followed by "Education / Training Event" (88.4%) and "Staff Appreciation" (86.4%). This suggests that "Staff Appreciation Events" may be an underutilized strategy.

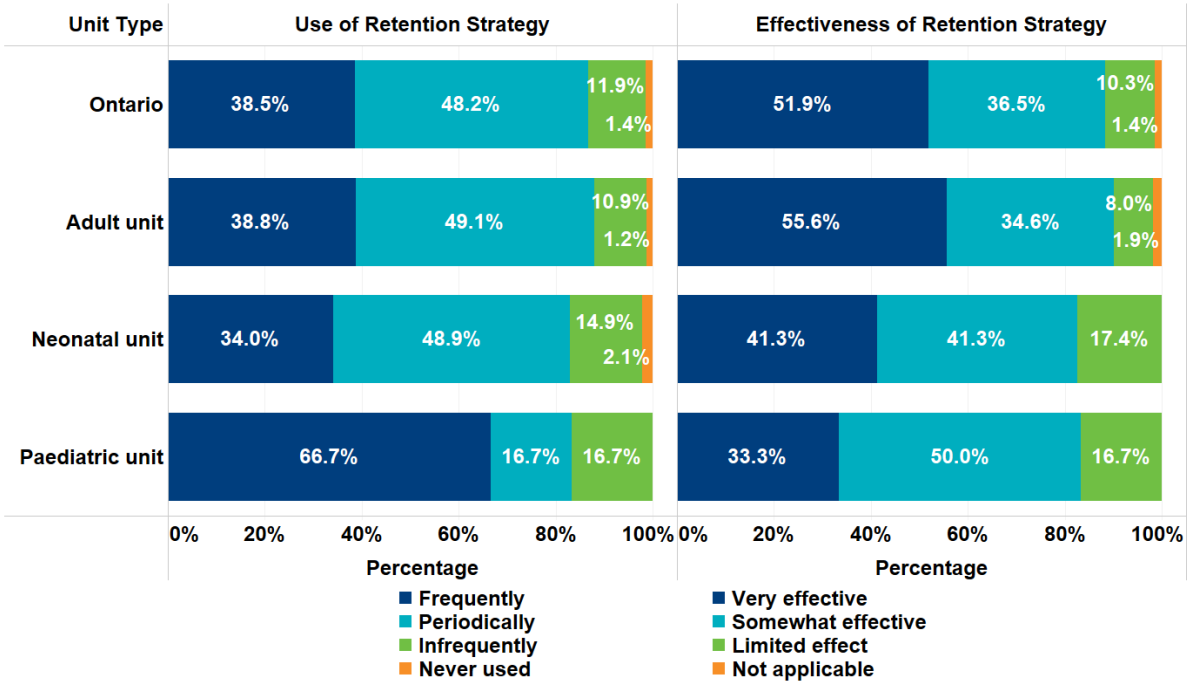
Figure 52: Use and Perceived Effectiveness of Retention Strategies in Critical Care Units, Provincial



Source: 2017/18 CCWP Online Data Collection Tool, Question 38 and 39

To understand further which units are using “Education / Training Events” as their method of retention, Figure 53 below shows the use and perceived effectiveness of this strategy by unit type All unit types show similar results with more than 80% using “Education / Training Events” frequently or periodically and a similar proportion indicating these sessions are very or somewhat effective.

Figure 53: Use and Perceived Effectiveness of Retention Strategy "Education/Training Events", by Unit Type

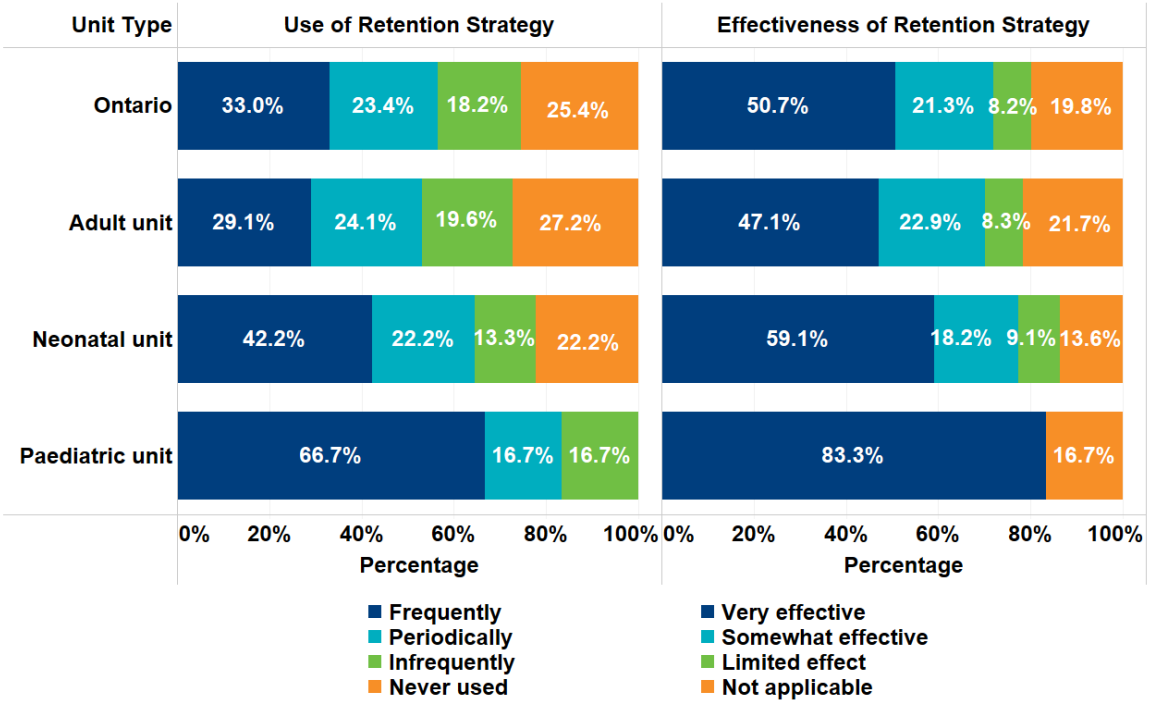


Source: 2017/18 CCWP Online Data Collection Tool, Question 38 and 39
Number of units that responded to question 38 (Use of Retention Strategy) = 218
Number of units that responded to question 39 (Effectiveness of Retention Strategy) = 214

To further determine which units are using “Flexible Staff Scheduling” as a method of retention, Figure 54 below shows the use and perceived effectiveness of this strategy by unit type.

Paediatric critical care units reported frequent use of “Flexible Staff Scheduling” (66.7% of units), with this method being identified as very effective by 83.3%. This strategy is less frequently used by other unit types (29% of adult units and 42% of neonatal units). It is still found to be a very effective strategy with units however, with 47% of adult units and 59% of neonatal unites rating it as very effective.

Figure 54: Use and Perceived Effectiveness of Retention Strategy "Flexible Staff Scheduling", by Unit Type



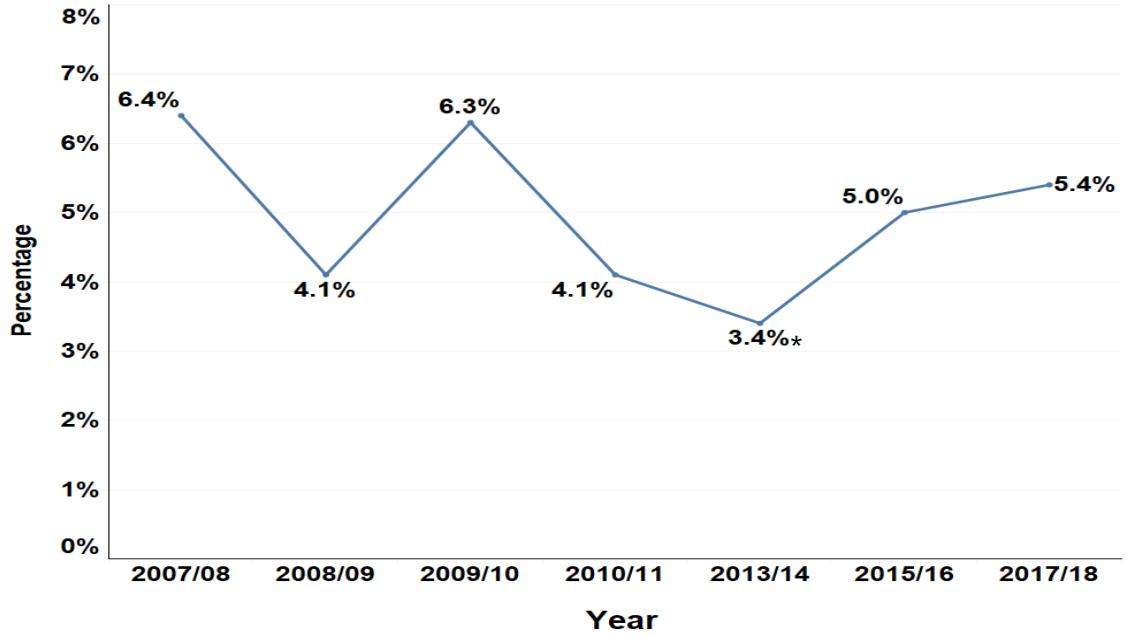
Source: 2017/18 CCWP Online Data Collection Tool, Question 38 and 39
Number of units that responded to question 38 (Use of Retention Strategy) = 209
Number of units that responded to question 39 (Effectiveness of Retention Strategy) = 207

7.4 Vacancy Rate

It has been suggested in the literature that the degree to which an organization is seen as an attractive place to work is an important factor on vacancy rate. Generally, the more people are attracted to work for an organization, the lower the vacancy rate (Rondeau, 2009).

As shown in Figure 55 below, the vacancy rate for nurses in critical care units has been variable year over year and maybe increased somewhat in recent years. All rates included in the Figure are for full-time, part-time and casual vacant positions combined. Between the years 2007/08 to 2017/18, the vacancy rate has ranged from a low of 3.4% in 2013/14 to a high of 6.4% in 2007/08. Most recently, as of March 31, 2018, the provincial vacancy rate for nurses in critical care units was 5.4%.

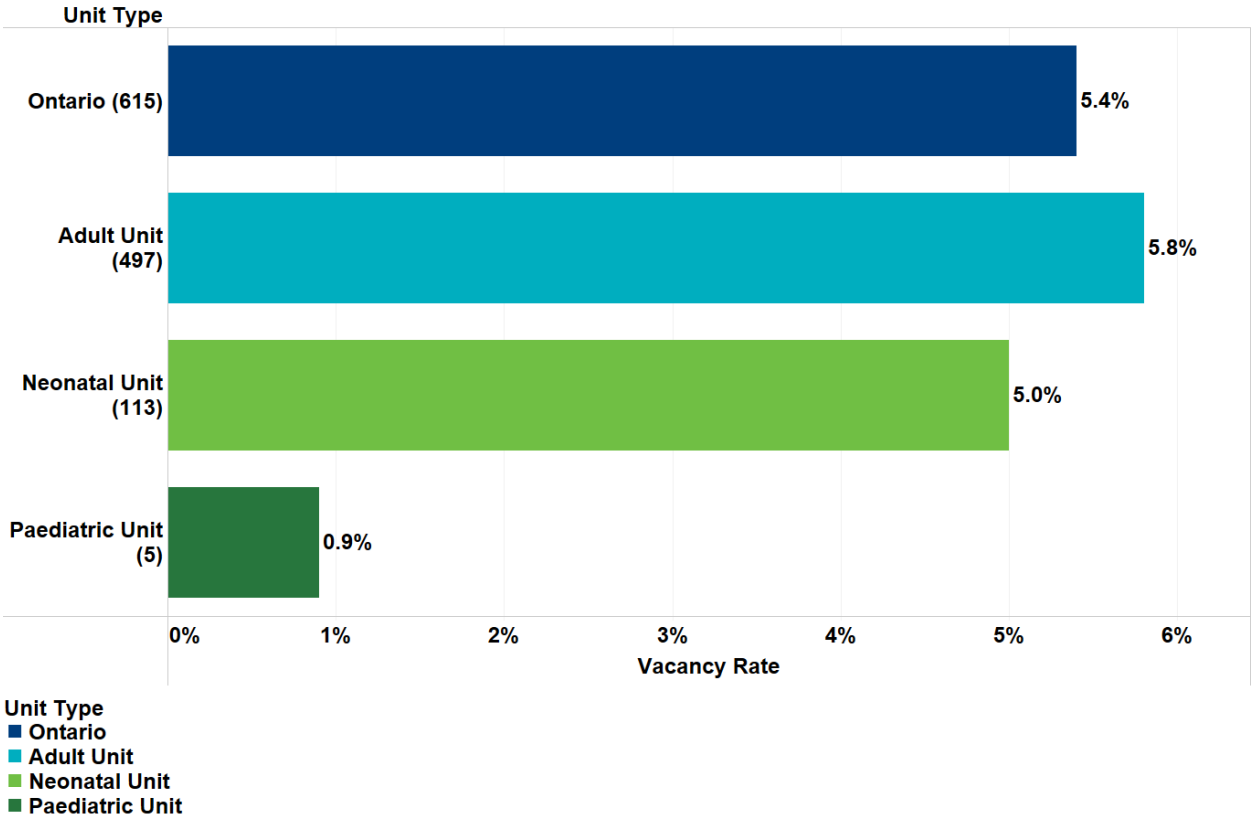
Figure 55: Vacancy Rate for Critical Care Units, Trend Over Time



NICUs were added in 2017/18
Source: 2017/18 CCWP Online Data Collection Tool, Question 5 and 33
*The vacancy rate for the 2013/14 CCWP was calculated using a weighted reported vacancy rate submitted per unit

As seen in Figure 56, the critical care unit nurse vacancy rate varies across unit types. Adult critical care units reported the highest vacancy rates at 5.8%. Paediatric critical care units at 0.9% reported the lowest vacancy rate.

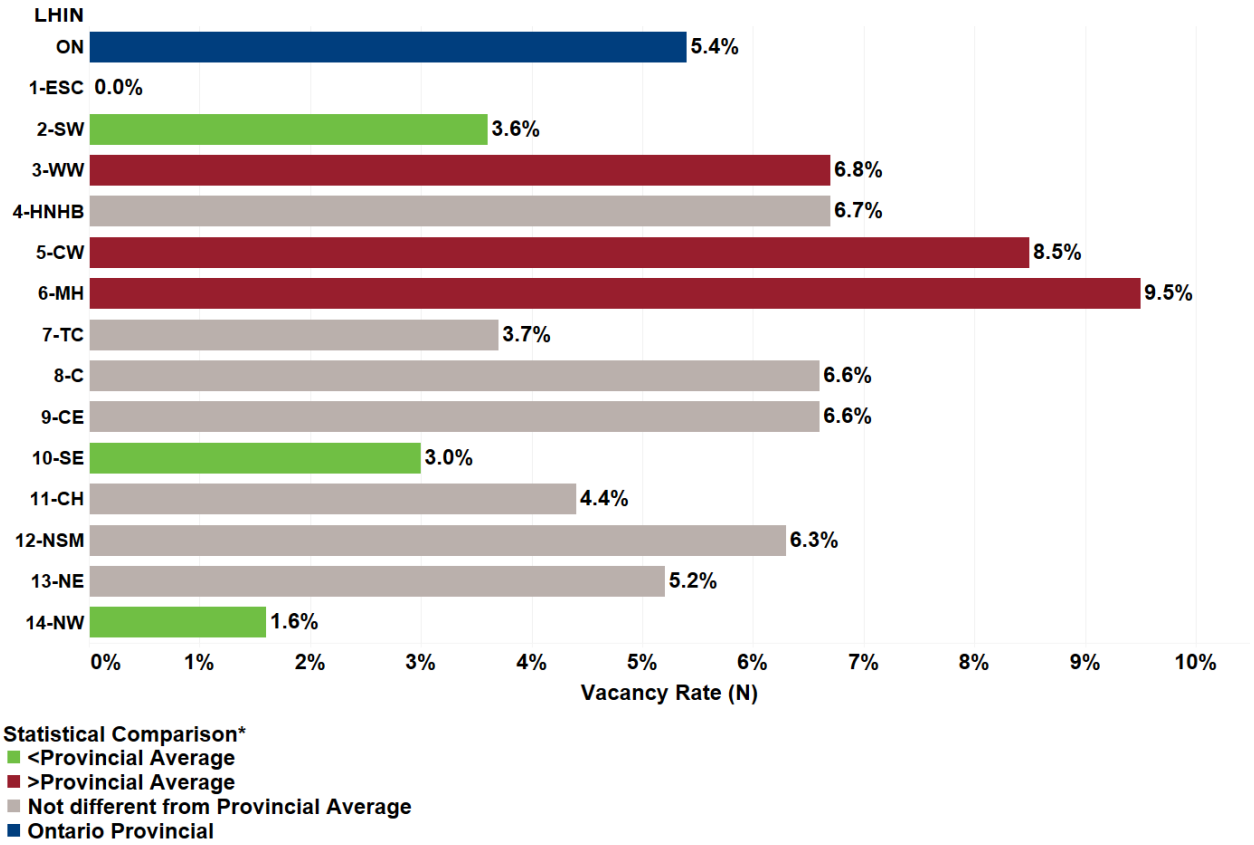
Figure 56: Vacancy Rate for Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 5 and 33
N = Number of vacancies

Across the province, the vacancy rate is variable in comparison to the provincial average of 5.4%. As shown in Figure 57, the North West (LHIN 14) has the lowest vacancy rate for critical care nurses at 1.6%. At the other end of the spectrum, the Mississauga Halton (LHIN 6) has the highest vacancy rate for critical care nurses at 9.5%. The vacancy rate in the Central West (LHIN 5) is also quite high at 8.5%.

Figure 57: Vacancy Rate for Critical Care Nurses, by LHIN



Source: 2017/18 CCWP Online Data Collection Tool, Question 5 and 33

8. Allied Health Professionals in Critical Care

Allied Health Professionals (AHPs) are important members of the critical care team. Although AHPs have traditionally not been the focus of national or provincial leadership or policy-making conversations for health care systems, this is starting to change(*8.2 Allied health workforce*, 2013; Bardsley, 2014; Boyce, 2001; Colleges, 2012; I. C. S. Committee, 2007; I. C. S. I. Committee, 2010)In particular, AHPs have been recognized as experts in transforming models of care using their strengths (Bardsley, 2014) in system and team integration as they work across many parts of the healthcare system as shared staff (*8.2 Allied health workforce*, 2013; Boyce, 2001; Fund, 2013; Oliver, 2014). As well, they are known for their contribution to maintaining health and supporting rehabilitation, especially for the frail elderly and growing complex care patient populations (*8.2 Allied health workforce*, 2013; Oliver, 2014).

Despite noting the key role that AHPs play in health and care systems, there remains a lack of health human resource intelligence across Canada and in Ontario for labour market information, data collection, and planning, as highlighted in Health Canada's 2012 report on sustaining the Allied Health Professions. Since 2015/16, the CCWP survey collects high-level human resource intelligence on a range of AHPs as selected through stakeholder consultations. The 2017/18 survey collected information on the following disciplines:

- Chaplains/Spiritual Carers/Pastors
- Dietitian/Clinical Nutritionists
- Occupational Therapists
- Pharmacists
- Physiotherapists
- Respiratory Therapists
- Social Workers
- Lactation Consultants

For a look into the AHP workforce in Ontario's critical care units, the following was collected in this year's survey:

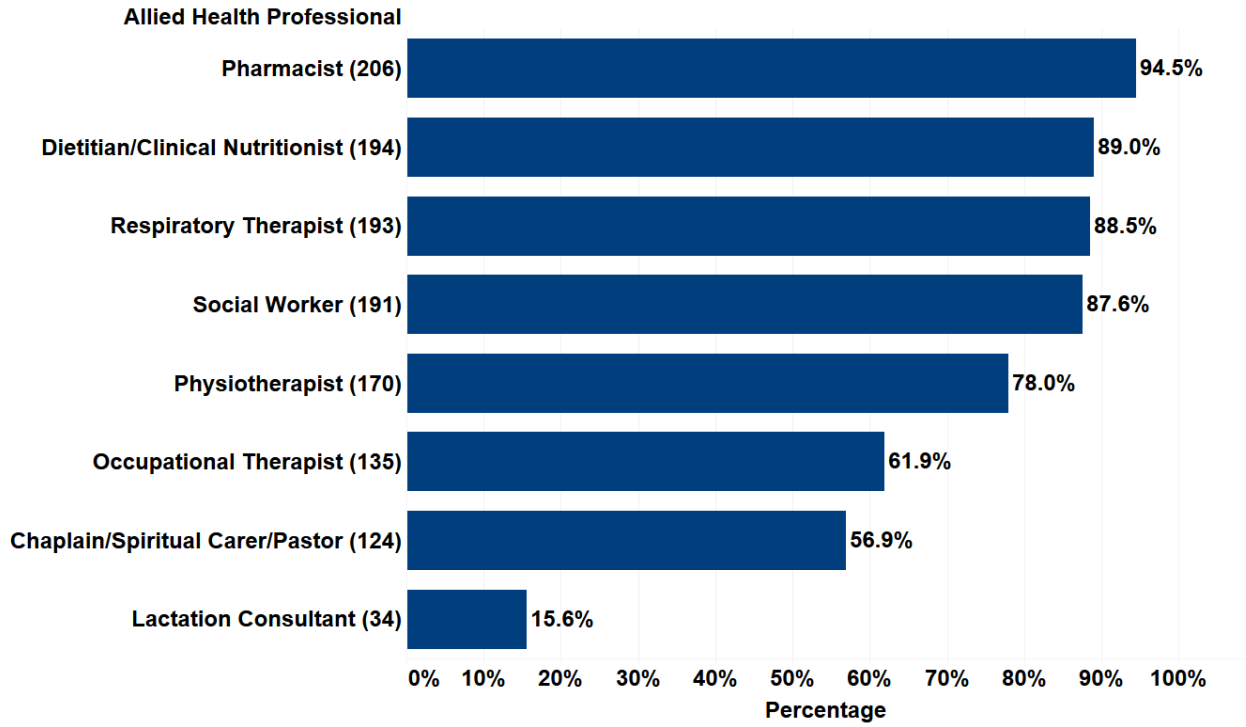
- The prevalence of the eight AHPs listed above in critical care units;
- Full-time equivalent (FTE) allocations for each discipline, with a minimum capture of 0.2 FTE; and,
- Both the weekday and weekend coverage, further broken down by the number of support hours per day, by discipline.

In addition, the new analysis undertaken in this year's report includes a view of the ratio of bed equivalents supported per FTE of allied health support per professional group. This analysis was supported by bed information from the Critical Care Information System (CCIS).

8.1 Use of Allied Health Professionals in Critical Care

Critical care units were asked to identify the allied health disciplines that were routinely (e.g. daily or weekly) involved in care delivery and patient support. As shown in Figure 58 Pharmacists are the most commonly used allied health support in critical care units, used by 94.5% of units that responded to this question. Other disciplines that are highly utilized by critical care units include Dietitian/Clinical Nutritionists (used by 89% of units), Respiratory Therapists (used by 88.5% of units), and Social Workers (used by 87.6% of units).

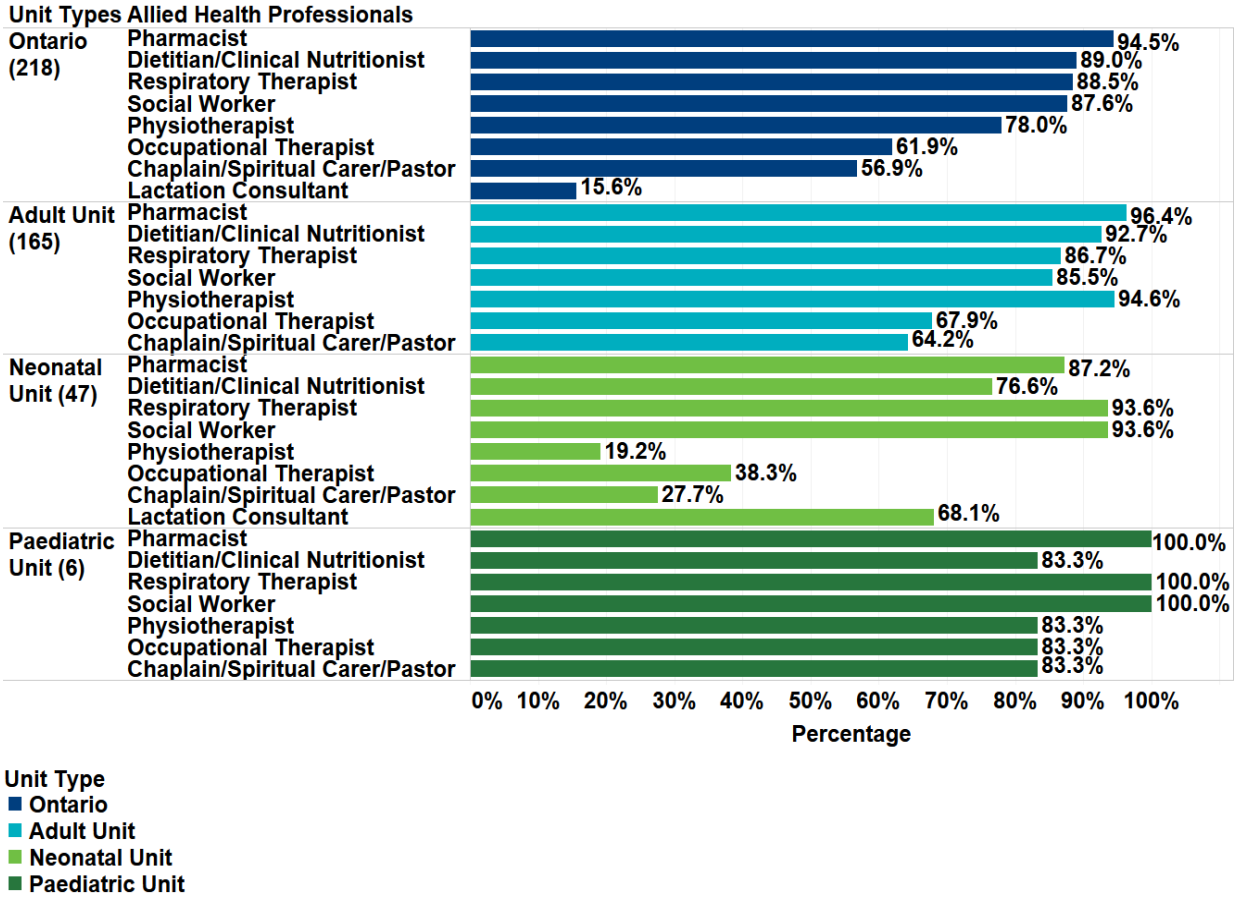
Figure 58: Routine Use of Allied Health Professionals in Critical Care Units, Provincial



Source: 2017/18 CCWP Online Data Collection Tool, Question 42
N = Number of units

Figure 59 explores a further breakdown of the routine use of allied health supports by unit type. Pharmacists are the most commonly utilized allied health professionals among the adult critical care units at 96.4%. Neonatal critical care units most commonly use services from Respiratory Therapists and Social Workers, reported by 93.6% of units. Paediatric critical care units utilized all three of these professional groups (Pharmacists, Respiratory Therapists and Social Worker) in 100% of the units that reported data.

Figure 59: Routine Use of Allied Health Professionals in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 42
N = Number of units

The following sections in this chapter will explore a further breakdown of the four most frequently used disciplines, looking at hours of support coverage on both weekdays and weekends as well as the number of bed equivalents supported per FTE of allied health professionals.

- Pharmacists
- Dietitian/Clinical Nutritionist
- Respiratory Therapist
- Social Work

8.2 Pharmacists

Pharmacy services in critical care are recognized as an essential component of multidisciplinary care for critically ill patients. Benefits of having Pharmacists within the critical care unit include assisting physicians and clinicians with pharmacotherapy decision-making, reducing medication errors, and improving medication safety systems to optimize patient outcomes. There have been documented improvements in the management of infections, anticoagulation therapy, sedation, and analgesia for patients receiving mechanical ventilation and in emergency response (Preslaski CR, 2013).

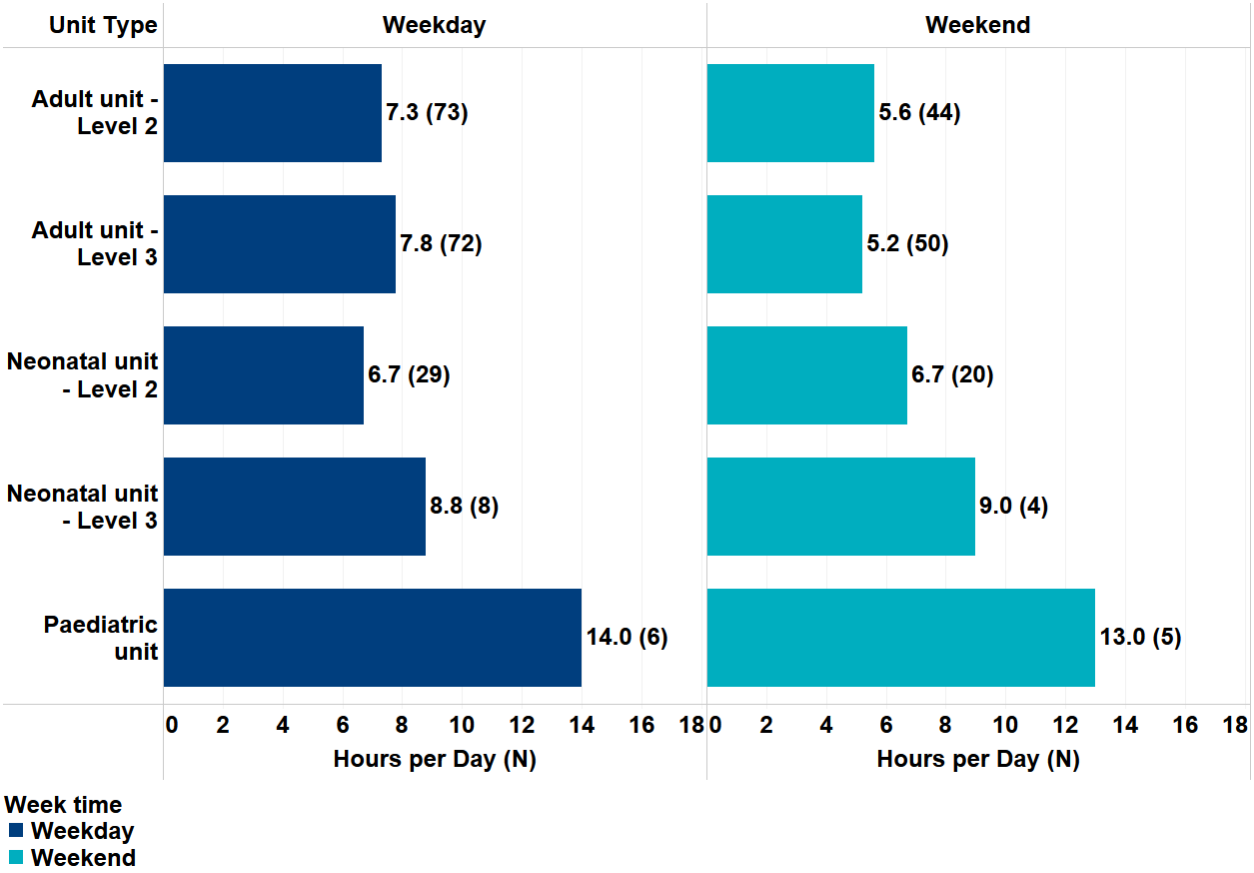
While there has been profiling on the general pharmacy workforce across Canada through CIHI's Health Workforce capture, and across Ontario from the Ontario College of Pharmacists, there does not seem to be research conducted on pharmacists specialized in critical care.

As previously stated in Figure 59, Pharmacists are routinely involved in care to the following degree in critical care units that reported information:

- 96.4% of adult critical care units;
- 87.2% of neonatal critical care units; and,
- 100% of paediatric critical care units.

Figure 60 reports the number of support hours by Pharmacists in critical care units by both unit type and unit level. Paediatric critical care units reported the greatest number of weekday and weekend hours of coverage with an average of 13.5 hours per day. Neonatal Level 2 units reported the lowest number of Pharmacist support hours during weekdays at 6.7 hours per day. The lowest number of support hours on weekends was reported by Level 3 adult critical care units with 5.2 hours per day.

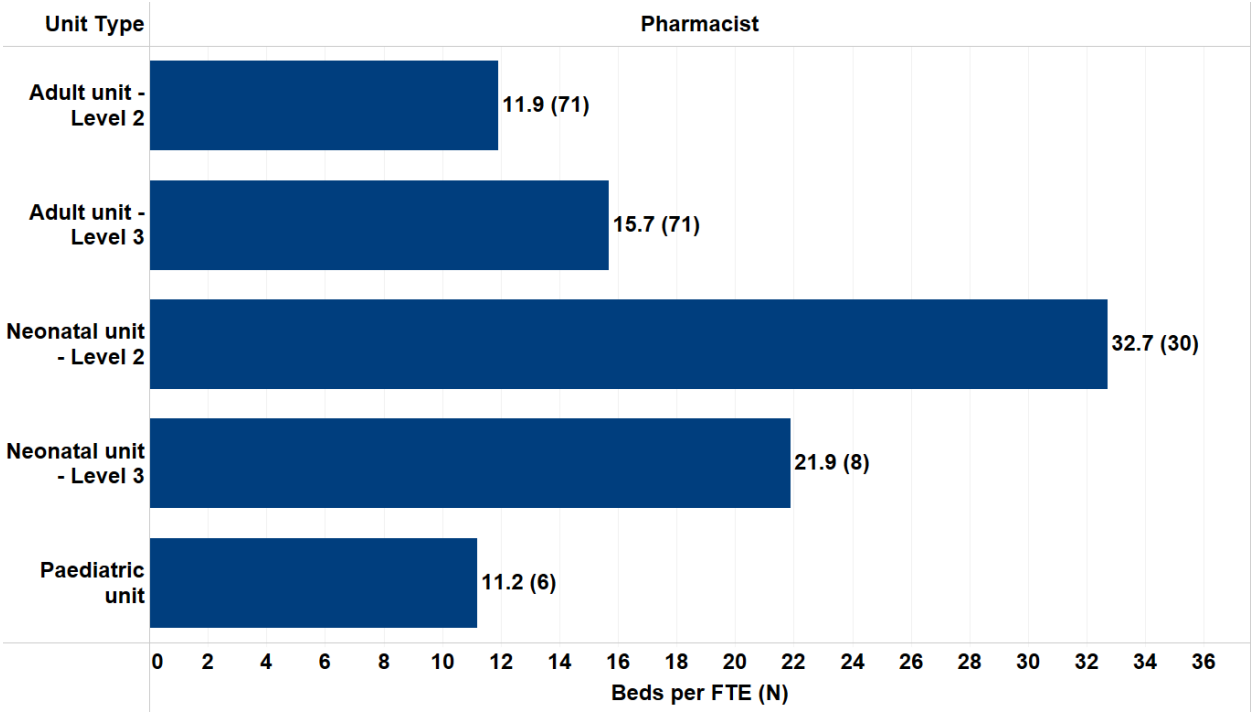
Figure 60: Pharmacist Support Hours per Day in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 45 and 46
N = Number of units

Figure 61 reports the ratio of beds per FTE of Pharmacists within critical care units. Paediatric units and Level 2 adult units have the highest levels of Pharmacists support with between 11 and 12 beds per FTE of Pharmacy support. In contrast, neonatal Level 2 units on average have a ratio of 1 Pharmacist per 32 beds.

Figure 61: Ratio of Beds to FTE of Pharmacist in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 44, bed numbers from CCIS
N = Number of units

8.3 Registered Dietitians/Clinical Nutritionists

According to Bailey et al (2012), nutritional support is an essential component of the care and treatment of the critically ill patient. Malnutrition may result from stress during the hyper metabolic response, which can lead to loss of lean body mass and impairment of immune function. The provision of timely and adequate nutritional support has been shown to be beneficial in improving the outcomes of critically ill patients. In particular, the presence of a registered dietitian during multidisciplinary rounds has been shown to improve the initiation of early nutritious support to maximize nutritional intake(Bailey, Clark, Nordlund, Shelton, & Farver, 2012).

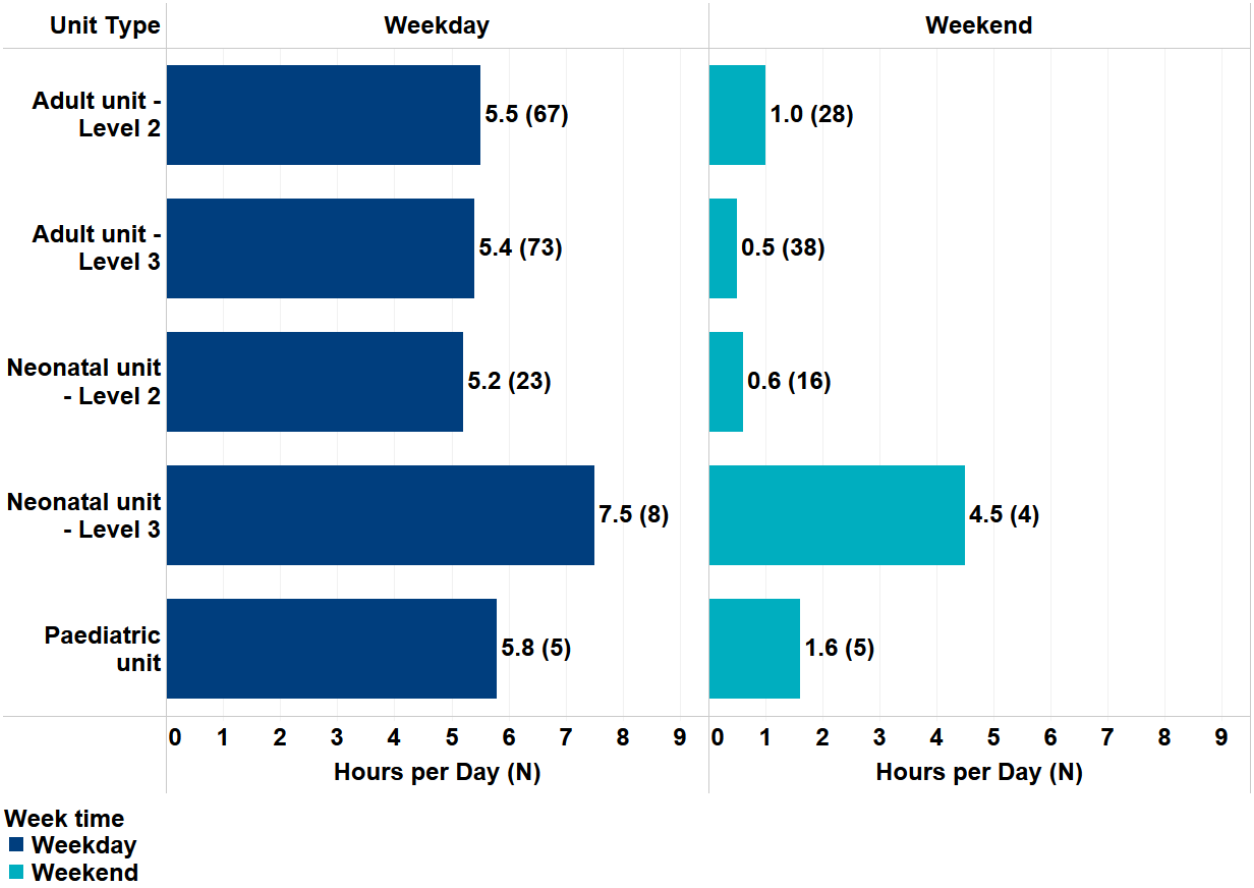
According to Dietitians of Canada's, first-ever report on dietitians working in acute care in Ontario, in 2017, Registered Dietitian (RD) staffing ranged widely among hospitals. In critical care specifically, RD FTEs per 100 inpatient beds ranged from 2.0 – 5.0. In neonatal intensive care units, FTEs per 100 beds ranged from 0.5 – 2.0 (Cuddy, 2018).

As previously stated in Figure 59, Dietitians / Clinical Nutritionists are routinely involved in care to the following degree in critical care units that reported information:

- 92.7% of adult critical care units;
- 76.6% of neonatal critical care units; and,
- 83.3% of paediatric critical care units.

Figure 62 reports the number of hours of support by Dietitians / Clinical Nutritionist by both unit type and unit level. Critical care units reported an average of 5.9 hours of coverage per day during the week, and 1.6 hours per day on weekends by Dietitians / Clinical Nutritionist (not shown). Neonatal Level 3 critical care units reported the highest amount of Dietitian / Clinical Nutritionist coverage on weekdays (7.5 hours per day) and weekends (4.5 hours per day). Other critical care unit types reported very little Dietitian / Clinical Nutritionist support on weekends with most having less than 1 hour of coverage per day.

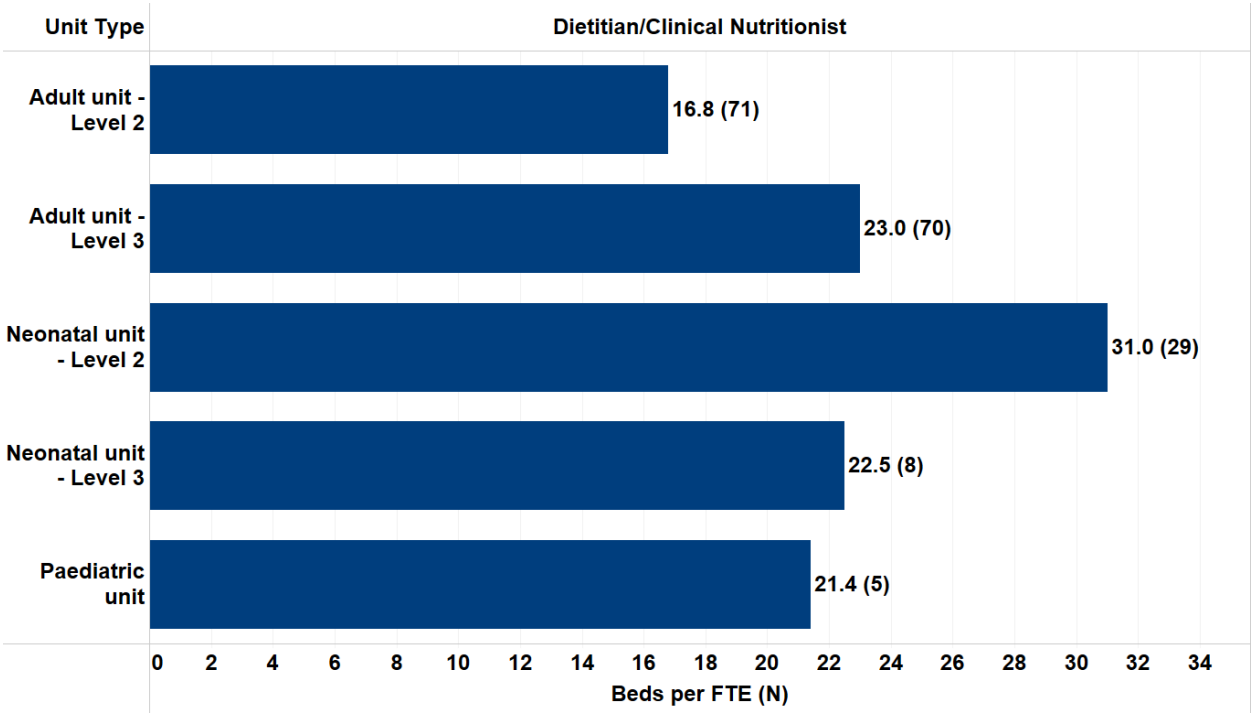
Figure 62: Dietitian / Clinical Nutritionist Support Hours per Day in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 45 and 46
N = Number of units

Figure 63 reports the ratio of beds per FTE of Dietitian / Clinical Nutritionist within critical care units. Adult Level 2 adult units have the highest levels of support with 16.8 beds per FTE. In contrast, neonatal Level 2 units on average have a ratio of 1 Dietitian / Clinical Nutritionist FTE per 31 beds.

Figure 63: Ratio of Beds to FTE of Dietitian/Clinical Nutritionist in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 44, bed numbers from CCIS
N = Number of units

8.4 Respiratory Therapists

Respiratory Therapists (RTs) have historically played a vital role in critical care and continue to do so. As summarized in an American study looking at the manpower needs and activities in respiratory therapy, The Society of Critical Care Medicine (SCCM) has numerous articles, recommendations, and guidelines for safe and effective critical care practice including the use of RTs. Some of the examples of the benefits cited include (Mathews, 2006):

- "The presence of full-time Respiratory Therapists dedicated to the ICU can reduce the length of stay, shorten ventilator days and reduce overall ICU costs."
- SCCM recommends that "respiratory services must be available 24 hours a day, 7 days a week" in facilities that have Level 1 ICU and by extension, in Level 2 facilities. Level 3 centers state that "A critical care trained nurse and Respiratory Therapist should be available on-site, 24hrs per day."

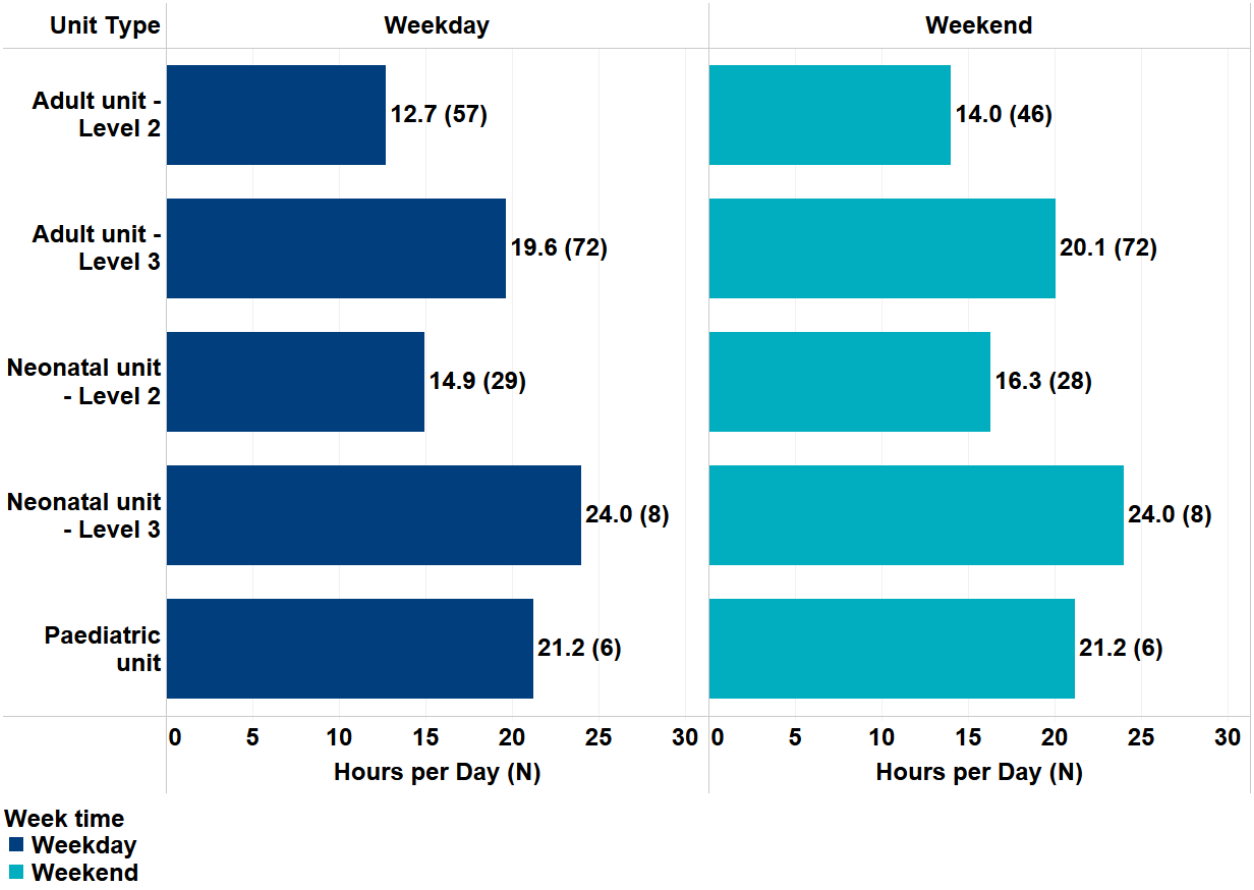
While there has been profiling on the general Respiratory Therapy workforce, there does not seem to be research conducted on respiratory therapy resource implications specifically within critical care in Canada or Ontario.

As previously stated in Figure 59, Respiratory Therapists are routinely involved in care to the following degree in critical care units that reported information:

- 86.7% of adult critical care units;
- 93.6% of neonatal critical care units; and,
- 100% of paediatric critical care units.

Figure 64 reports the number of support hours by Respiratory Therapists by both unit type and unit level. Respiratory Therapists are highly used among all unit types and levels on both weekdays and weekends. On average in Ontario, critical care units, weekday coverage from Respiratory Therapists ranged from 24 hours per day in Neonatal Level 3 units to 12.7 hours per day in adult Level 2 units. The number of support hours for Respiratory Therapists appears to be slightly higher on weekends among all unit types and unit levels.

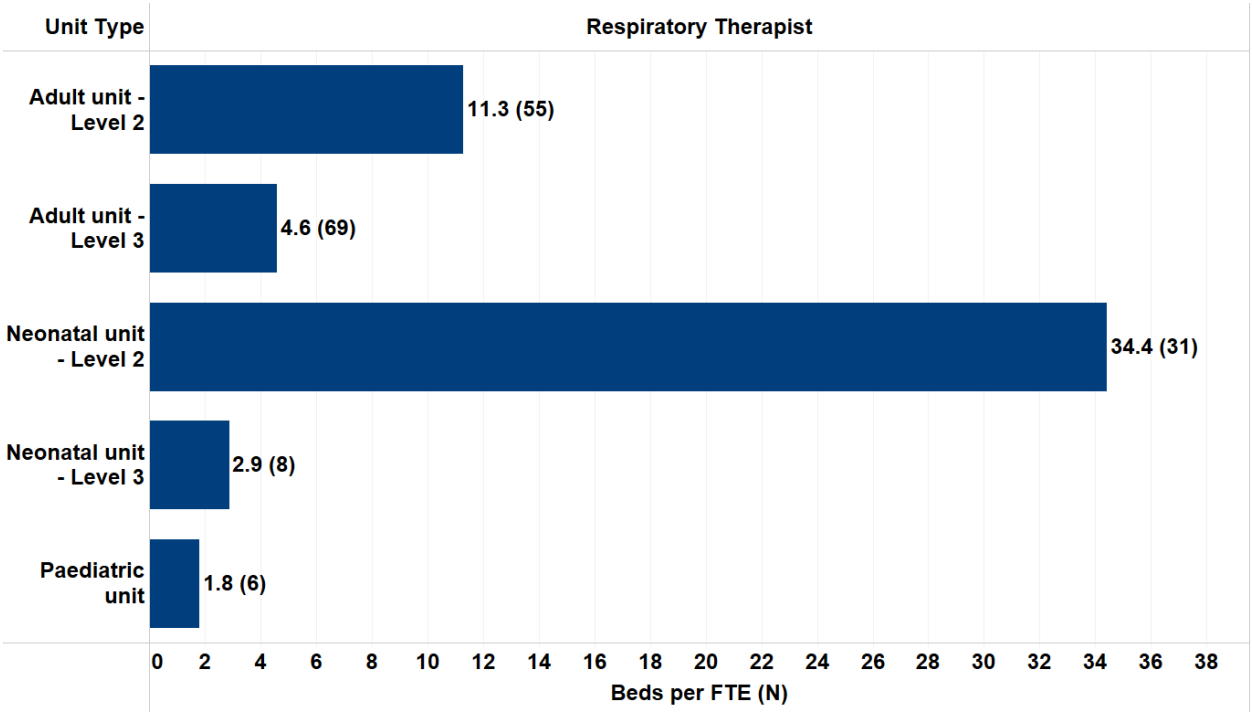
Figure 64: Respiratory Therapist Support Hours per Day in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 45 and 46
N = Number of units

Figure 65 reports the ratio of beds per FTE of Respiratory Therapist within critical care units. Paediatric units and Level 3 neonatal units have the highest levels of support with between about 2 and 3 beds per FTE. In contrast, neonatal Level 2 units on average have a ratio of 1 Respiratory Therapist FTE per 34 beds.

Figure 65: Ratio of Beds to FTE of Respiratory Therapist in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 44, bed numbers from CCIS
N = Number of units

8.5 Social Workers

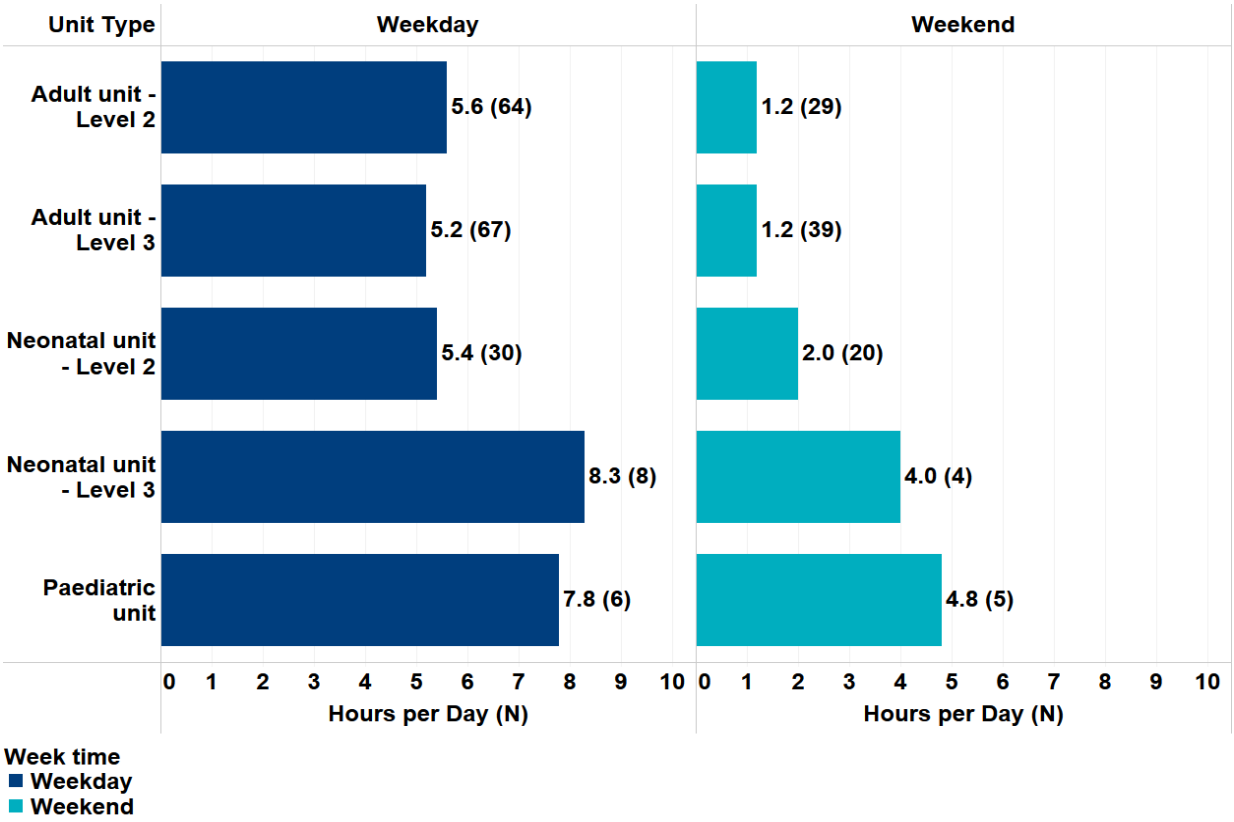
While there remains scarce empirical data describing the role of the critical care Social Worker in critical care units, common themes from a systematic review highlighted the role of Social Workers as counseling professionals, facilitators of communication, and resource agents. In particular, they provide critical skills in crisis intervention, psychosocial assessment, facilitating communication, end-of-life care, and practical assistance(Hartman-Shea, Hahn, Fritz Kraus, Cordts, & Sevransky, 2011).

As previously stated in Figure 59, Social Workers are routinely involved in care to the following degree in critical care units that reported information:

- 85.5% of adult critical care units;
- 93.6% of neonatal critical care units; and,
- 100% of paediatric critical care units.

Figure 66 reports the number of support hours by Social Workers in critical care units by unit type and unit level. Neonatal Level 3 critical care units reported the highest hours of support by Social Workers with 8.3 hours per day on average while paediatric units reported similarly high levels of coverage (7.8 hours per day on average for weekdays). Level 2 neonatal units and adult units reported lower levels of coverage for both weekdays (between 5.2 and 5.6 hours of coverage per day) and weekends (between 1.2 and 2 hours of coverage per day).

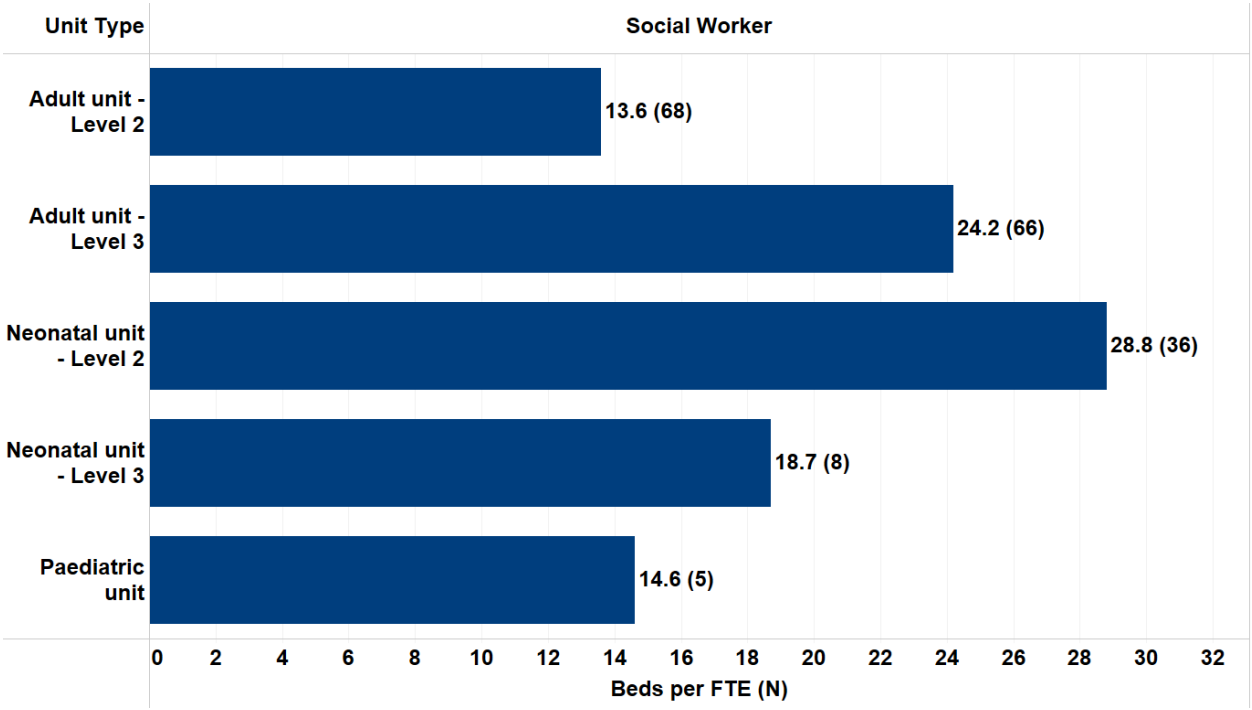
Figure 66: Social Worker Support Hours per Day in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 45 and 46
N = Number of units

Figure 67 reports the ratio of beds per FTE of Social Worker within critical care units. Adult Level 2 units and N units have the highest levels of support with between 13.6 and 14.6 beds per FTE. In contrast, neonatal Level 2 units on average have a ratio of 1 Social Worker FTE per 29 beds.

Figure 67: Ratio of Beds to FTE of Social Worker in Critical Care Units, by Unit Type



Source: 2017/18 CCWP Online Data Collection Tool, Question 44, bed numbers from CCIS
N = Number of units

Conclusion

Critical care units perform a central role in our healthcare system, delivering care to the most acutely ill patients, and responding to increased demands in times of epidemic and system surge. As well, the nursing resources in critical care units across the province account for 12% of all nurses in Ontario and are thus an important group in understanding overall nursing trends.

This report has undertaken a comprehensive review of staffing practices in adult, paediatric, and neonatal critical care across Ontario. The report has also highlighted areas of variation in the composition of the workforce, staffing practices and training of staff across the province, or across types of units. The intention of highlighting this variation in practice is to allow stakeholder groups, through the Regional Critical Care Networks, and individual units to understand where variation exists and to address areas that may be of concern. At a provincial level, these insights can be used to more effectively target supports and investments in education, career development opportunities, and other areas. Such efforts, at the unit, regional, and provincial levels, will foster a more robust workforce and help ensure patients have access to timely and quality care.

Glossary of Terms

Direct Care Nurses
Intended to capture nursing roles providing direct bedside care to patients. Includes roles such as Registered Nurses or Registered Practical Nurse.

Full-Time Equivalent (FTE)
Hours paid to one employee working on a full-time basis. Includes both worked and benefit hours. Does not include overtime hours. In most organizations, 1 FTE = 1,950 hours annually.

Functional Center
A department or unit within a hospital to which costs and activity are tracked.

Headcount
Count of individuals employed, regardless of FTE allocation. Intended to capture the number of staff, across each nursing and allied health role, associated with the unit/functional centre that support critical care activities.

Ontario Healthcare Reporting Standards (OHRS)
OHRS provides the framework for the accounting and reporting of financial and activity data across healthcare organizations in a consistent and standardized way.

Provincial Report Appendices

Appendix A: Overview of Survey Responses by LHIN

Table 7: Critical Care Nurses Reported in Data Collection Tools, by LHIN

LHIN	Total # of Critical Care Units	Number of Critical Care Units Responded			Number of Critical Care Nurses Represented		
		Online Submission	Human Resources Submission	Finance Submission	Online Submission	Human Resources Submission	Finance Submission
Ontario	246	218	206	215	11,437	10,127	9,965
LHIN 1. Erie St. Clair (ESC)	10	6	5	8	166	148	350
LHIN 2. South West (SW)	29	27	26	21	1,177	1,111	507
LHIN 3. Waterloo Wellington (WW)	14	12	14	14	473	471	375
LHIN 4. Hamilton Niagara Haldimand Brant (HNHB)	33	31	28	30	1,778	1,348	1,376
LHIN 5. Central West (CW)	8	8	8	7	483	387	352
LHIN 6. Mississauga Halton (MH)	13	12	12	13	743	648	748
LHIN 7. Toronto Central (TC)	40	38	33	40	2,858	2,053	2,807
LHIN 8. Central (C)	15	14	14	15	765	867	883
LHIN 9. Central East (CE)	18	15	14	15	646	791	714
LHIN 10. South East (SE)	11	9	6	8	521	345	458
LHIN 11. Champlain (CH)	25	23	23	24	1,113	1,228	842
LHIN 12. North Simcoe Muskoka (NSM)	9	7	8	7	223	252	178
LHIN 13. North East (NE)	17	12	11	11	364	349	284
LHIN 14. North West (NW)	4	4	4	2	127	129	92

Figure 68: Local Health Integration Network (LHIN) Regions

1: Erie St. Clair (ESC)

2: South West (SW)

3: Waterloo Wellington (WW)

4: Hamilton Niagara Haldimand Brant (HNHB)

5: Central West (CW)

6: Mississauga Halton (MH)

7: Toronto Central (TC)

8: Central (C)

9: Central East (CE)

10: South East (SE)

11: Champlain (CH)

12: North Simcoe Muskoka (NSM)

13: North East (NE)

14: North West (NW)

Appendix B: Calculations Table

Table 8: Calculations Table

Measure	Related Figures	Definitions	Calculation
Response Rate	Figure 1 Table 2	A unit was included in the overall response rate if any usable data was provided for the data collection tool.	= [Number of units Responded] / [Total Number of Units in Group]
Nursing Earned Hours by Type	Figure 14 Figure 15 Figure 16	• UPP RN regular worked hours (OHRS account 63511*2) • UPP RN overtime hours (OHRS account 63511*1) • UPP RN sick hours (OHRS account 63511*3) • UPP RN vacation hours (OHRS account 63511*4) • UPP RN education hours (OHRS account 63511*5) • UPP RN orientation hours (OHRS account 63511*6) • UPP RN other hours (OHRS account 63511*7 and 63511*8) • UPP RN earned hours (OHRS account 63511**) • Includes all employment status groups (e.g. 1-6	= [UPP RN hours type] / [UPP RN earned hours]
Nursing Overtime Hours as a Proportion of Productive Hours	Figure 17 Figure 18	• UPP RN overtime hours (OHRS account 63511*1) • UPP RN regular worked hours (OHRS account 63511*2) • Includes all employment status groups (e.g. 1-6) • Units included in the numerator match units included in the denominator	= [UPP RN overtime hours] / [(UPP RN regular worked hours) + (UPP RN overtime hours)]
Nursing Sick Rate	Figure 19 Figure 20 Figure 21	• UPP RN sick hours (OHRS account 63511*3) • UPP RN earned hours (OHRS account 63511**) • Includes all employment status groups (e.g. 1-6) • Units included in the numerator match units included in the denominator	= [UPP RN sick hours] / [UPP RN earned hours]
Nursing Education Time	Figure 22	• UPP RN education hours (OHRS account 63511*5) • UPP RN earned hours (OHRS account 63511**) • Includes all employment status groups (e.g. 1-6) • Units included in the numerator are a subset of units included in the denominator. All units reporting earned hours are included in denominator.	= [UPP RN education hours] / [UPP RN earned hours]

Measure	Related Figures	Definitions	Calculation
Nursing Worked Hours per Patient Day	Figure 27 Figure 28	• UPP RN overtime hours (OHRS account 63511*1) • UPP RN regular worked hours (OHRS account 63511*2) • Includes all employment status groups (e.g. 1-6) • Patient days (OHRS account 403****) • Units included in the numerator match units included in the denominator	= [(UPP RN regular worked hours) + (UPP RN overtime hours)] / [Patient days]
Direct Care Nurse Turnover	Figure 41 Figure 42	• Number of direct care nursing exits (including retirements) as identified in Human Resources data submission for the fiscal year (e.g. April 1 to March 31) • Number of direct care nurses as identified by Human Resources data submission as of March 31 • Units included in the numerator match units included in the denominator	= [Number of direct care nursing exits] / [Number of direct care nurses]
Vacancy Rate	Figure 55 Figure 56 Figure 57	• Number of reported vacant nursing positions as of March 31, 2016 as identified in the online data submission • Number of nursing staff as identified in question 5 of the online data submission • Includes all nursing staff for full-time, part-time and casual positions	= [Number of vacant nursing positions] / [(Number of nursing staff) + (Number of vacant nursing positions)]

Appendix C: Online Data Collection Tool

Critical Care Workforce Profile (CCWP) 2018 - Unit Questionnaire

Questionnaire Instructions

Welcome to the Critical Care Workforce Profile (CCWP) 2018.

Critical Care Services Ontario (CCSO) is pleased to launch the Critical Care Workforce Profile (CCWP) 2018.

We are asking for 3 sets of data submissions per unit:

1. From the Human Resources Department - Requirements for this request were included in the initial survey communication email, and are explained further in the supporting User Guide.

2. From the Finance Department - Requirements for this request were included in the initial survey communication email, and are explained further in the supporting User Guide.

3. From theUnit Manager to be submitted via the unique unit-related SurveyMonkey link provided for each unit.

This online survey is the 3rd data request, to be submitted by theUnit Managers. A unique SurveyMonkey link has been sent for each unit you managein the invitation email.

General Instructions

- **Please complete the data collection tools with reference to activities and experiences in the 2017/2018 fiscal year (April 1 2017 to March 31, 2018), or as a snapshot on March 31 2018. Direction is provided in each section to indicate which time period to reflect upon.**
- **Please provide an answer for EVERY question in this survey.**
- **Please complete ONE online survey for EACH critical care unit you manage (as reported in CCIS).**
- **The survey will take approximately 45 minutes to complete.**
- **The User Guide (attached in the email) contains detailed instructions should you require clarification.**
- **SurveyMonkey will allow you to save your work by clicking the SAVE AND NEXT button at the bottom of the page. After clicking save, you may return to the survey at a later time.**
- **Upon clicking SUBMIT (following the Allied Health section), SurveyMonkey will automatically return the survey to CCSO. No other submissions will be accepted.**

This questionnaire will request four types of answers:

1. **CLICK a round option circle (button) to indicate a singular selection**
2. **CLICK a square option box to indicate multiple selection(s)**
3. **ENTER a numeric response into the shorter grey boxes**
4. **ENTER a word response (free text) into the longer grey boxes**

IMPORTANT DATES

Week of June 4th, 2018: Dissemination of Survey to Critical Care Units
June 8, 12 and 20 2018: Optional Webinar/Education Sessions
August 1, 2018: Deadline to return Surveys to CCSO
Spring 2019: Final Provincial Report distributed through CCSO website.

Any questions or comments about the CCWP can be directed toMarlene Rodrigues Business Analyst at Critical Care Services

* 1. Please specify your Corporation

* 2. Please enter your unit's CCIS or NICU code:
(For reference see CCIS and NICU codes highlighted in the official email communication)

NURSING WORKFORCE

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

Please answer questions on this page relating to the nursing staff employed in your Critical Care unit on March 31, 2018.

3. **What is the total FTEs on your Critical Care unit in each of the following groupings (If entries are decimals skip to Q4):**

a. Clinical Nurse Specialist (CNS)

b. Nurse Educator

c. Nurse Manager

d. Nurse Practitioner (NP)

e. Permanent charge nurse without a patient assignment

f. Registered Nurse (RN), not included in other groupings listed

g. Registered Practical Nurse (RPN)

h. Critical Care Response Team (CCRT) assignment

i. NICU patient transport team (NICU units ONLY)

j. Other

4. **For DECIMAL ENTRIES complete this question: What is the total FTEs on your Critical Care unit in each of the following groupings:**

a. Clinical Nurse Specialist (CNS)

b. Nurse Educator

c. Nurse Manager

d. Nurse Practitioner (NP)

e. Permanent charge nurse without a patient assignment

f. Registered Nurse (RN), not included in other groupings listed

g. Registered Practical Nurse (RPN)

h. Critical Care Response Team (CCRT) assignment

i. NICU patient transport team (NICU units ONLY)

j. Other

* 5. What is the total number of bedside nurses (ie. individuals and not FTEs) in this Critical Care unit:

Please note, this number provided will be referenced throughout the survey.

Bedside nurses in this Critical Care unit

* 6. Acknowledgement:

- ◯ I have answered all questions on this page and would like to proceed to the next page
- ◯ I have not answered all questions on this page and would like to proceed to the next page (I understand that any questions left unanswered will be reflected as missing data)

NURSING WORKFORCE

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

Please answer this section relating to the nursing staff employed in your Critical Care unit on March 31, 2018.

7. Of the {{ Q5 }} number of bedside nurses reported in Q5, how many have been working as a registered nurse:

a. Less than 3 years

b. 3 - 5 years

c. 6 - 10 years

d. 11 - 20 years

e. More than 20 years

8. Of the {{ Q5 }} number of bedside nurses reported in Q5, how many have been working in Critical Care:

a. Less than 3 years

b. 3 - 5 years

c. 6 - 10 years

d. 11 - 20 years

e. More than 20 years

9. Of the {{ Q5 }} number of bedside nurses reported in Q5, how many havebeen working in THIS particular unit:

a. Less than 3 years

b. 3 - 5 years

c. 6 - 10 years

d. 11 - 20 years

e. More than 20 years

10. Of the {{ Q5 }} number of bedside nurses reported in Q5, please indicate the number of nurses whose highest level of education falls in the following categories:

a. Nursing diploma

b. Non-nursing undergraduate degree

c. Nursing undergraduate degree

d. Nursing master's degree

e. Non-nursing master's degree

f. Nursing doctorate

g. Non-nursing doctorate

11. Of the {{ Q5 }} number of bedside nurses reported in Q5, what is the number of nurses who attained their basic nursing training outside of Canada (*if there are none, please indicate 0*):

* 12. Acknowledgement:

- ◯ I have answered all questions on this page and would like to proceed to the next page
- ◯ I have not answered all questions on this page and would like to proceed to the next page (I understand that any questions left unanswered will be reflected as missing data)

Critical Care Workforce Profile (CCWP) 2018 - Unit Questionnaire

13. Are you reporting for an Adult, Paediatric or Neonatal Critical Care unit?

- ◯ Adult unit (Choosing this option will send you to adult CC nurse specific training questions)
- ◯ Paediatric unit (Choosing this option will send you to paediatric CC nurse specific training questions)
- ◯ Neonatal unit (Choosing this option will send you to neonatal CC nurse specific training questions)

NURSING WORKFORCE TRAINING - (Adult)

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

Please answer this section relating to the nursing staff employed in your Critical Care unit on March 31, 2018.

14. Of the {{Q5}} number of bedside nurses reported in Q5, how many have completed Advanced Cardiac Life Support (ACLS) Training, according to the following categories:

a. Have current ACLS Training (e.g. training within the last 2 years)

b. Do not have current ACLS Training

c. Don't know if ACLS Training has been completed

15. Of the {{Q5}} number of beside nurses reported in Q5, how many have completed Critical Care training according to the following categories?

a. 300+ hours of didactic and clinical critical care training

b. Some didactic and clinical critical care training, less than 300 hours

c. No didactic and clinical critical care training

d. Don't know what level of didactic and clinical critical care training achieved

16. Of the X number of bedside nurses reported above (a. Completed 300+ hours of critical care training), what type of Critical Care Certificate did they obtain?

a. Ontario College Graduate Certificate (OCGC)

b. Continuing Education Certificate

c. Hospital In-House Training Certificate

d. Other

17. Of the X number of bedside nurses reported above (b. Completed some training less than 300 hours), what type of Critical Care Certificate did they obtain?

a. Ontario College Graduate Certificate (OCGC)

b. Continuing Education Certificate

c. Hospital In-House Training Certificate

d. Other

NURSING WORKFORCE TRAINING - (Paediatric)

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

Please answer this section relating to the nursing staff employed in your Critical Care unit on March 31, 2018.

18. Of the {{Q5}} number of bedside nurses reported in Q5, how many have completed Paediatric Advanced Life Support (PALS) Training, according to the following categories:

a. Have current PALS Training (e.g. training within the last 2 years)

b. Do not have current PALS Training

c. Don't know if PALS Training has been completed

19. Of the {{Q5}} number of beside nurses reported in Q5, how many have completed Critical Care training according to the following categories?

a. 300+ hours of didactic and clinical critical care training

b. Some didactic and clinical critical care training, less than 300 hours

c. No didactic and clinical critical care training

d. Don't know what level of didactic and clinical critical care training achieved

20. Of the X number of bedside nurses reported above (a. Completed 300+ hours of critical care training), what type of Critical Care Certificate did they obtain?

a. Ontario College Graduate Certificate (OCGC)

b. Continuing Education Certificate

c. Hospital In-House Training Certificate

d. Other

21. Of the X number of bedside nurses reported above (b. Completed less than 300 hours of critical care training), what type of Critical Care Certificate did they obtain?

a. Ontario College Graduate Certificate (OCGC)

b. Continuing Education Certificate

c. Hospital In-House Training Certificate

d. Other

NURSING WORKFORCE TRAINING - (Neonatal)

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

Please answer this section relating to the nursing staff employed in your Critical Care unit on March 31, 2018.

22. What is the minimum number of NICU training hours (didactic and clinical) required of bedside nurses to work in your Neonatal Intensive Care Unit in addition to hospital and unit orientation?

- ◯ a. 0-50 hours
- ◯ b. 50-100 hours
- ◯ c. 200-300 hours
- ◯ d. Over 300 hours
- ◯ e. 100-200 hours

23. Of the {{Q5}} number of bedside nurses reported in Q5, how many have completed Neonatal Resuscitation Program (NRP) Training, according to the following categories:

a. Have current NRP Training (e.g. training within the last 2 years)

b. Do not have current NRP Training

c. Don't know if NRP Training has been completed

NURSING TURNOVER - EXITS 1

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

* 24. Please identify the total number of bedside nurses who have left your Critical Care unit between April 1, 2017 and March 31, 2018.

* 25. Acknowledgement:

- ◯ I have answered all questions on this page and would like to proceed to the next page
- ◯ I have not answered all questions on this page and would like to proceed to the next page (I understand that any questions left unanswered will be reflected as missing data)

NURSING TURNOVER - EXITS 2

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

26. Of the {{ Q24 }} number of bedside nurses that left your Critical Care unit between April 1, 2017 and March 31, 2018, how many exited for the following reasons:

a. Move to a new nursing role or position

b. Retirement

c. Illness or disability

d. Left to pursue non-nursing education

e. Exit from nursing profession

f. Promotion to another role

g. Personal relocation

h. Unknown

i. Other

27. Of the {{ Q24 }} number of bedside nurses that left your Critical Care unit between April 1, 2017 and March 31, 2018, how many exited to the following destinations

a. Remains in ICU - different unit within same hospital

b. Remains in ICU - different hospital

c. Remains in nursing outside of ICU - within same hospital

d. Remains in nursing outside of ICU - different hospital

e. Remain in nursing - outside of hospital setting

f. Unknown

g. Other

* 28. Acknowledgement:

- ◯ I have answered all questions on this page and would like to proceed to the next page
- ◯ I have not answered all questions on this page and would like to proceed to the next page (I understand that any questions left unanswered will be reflected as missing data)

NURSING TURNOVER - Employment Status 1

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

* 29. Please identify the total number of bedside nurses who changed employment status (e.g. went from full-time to casual, etc.) in your Critical Care unit between April 1, 2017 and March 31, 2018.

* 30. Acknowledgement:

- ◯ I have answered all questions on this page and would like to proceed to the next page
- ◯ I have not answered all questions on this page and would like to proceed to the next page (I understand that any questions left unanswered will be reflected as missing data)

NURSING TURNOVER - Employment Status 2

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

31. Of the {{ Q29 }} number of bedside nurses that changed employment status (e.g. went from full-time to casual, etc.) in your Critical Care unit between April 1, 2017 and March 31, 2018, identified in Q29, how many fall in the following categories:

a. Move from full time to part time

b. Move from full time to casual

c. Move from part time to full time

d. Move from part time to casual

e. Move from casual to a permanent or temporary position

f. End of a temporary assignment

g. Unknown

h. Other

* 32. Acknowledgement:

- ◯ I have answered all questions on this page and would like to proceed to the next page
- ◯ I have not answered all questions on this page and would like to proceed to the next page (I understand that any questions left unanswered will be reflected as missing data)

NURSING RECRUITMENT AND RETENTION

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

Please answer questions on this page to your experience with recruitment and retention in your Critical Care unit between April 1, 2017 and March 31, 2018.

33. On March 31, 2018 please indicate the total number of vacant budgeted bedside nursing positions (according to your hospital's position management system) for your Critical Care unit in the following categories:

a. Full-time

b. Part-time

c. Casual

34. How does your Critical Care unit manage with short-term (shift-to-shift) RN shortages?
Please identify how often each approach is used, according to the scale provided.

	Frequently used (i.e.. >50% of the time)	**Sometimes used** (i.e.10-50% of the time)	**Rarely / never used** (i.e.. <10% of the time)
a. Hospital-wide critical care RN staffing pool			
b. Expanded staff assignments	◯	◯	◯
c. Scheduled changes (e.g. cancelling OR)			
d. Mandatory overtime (including weekend staffing)	◯	◯	◯
e. Bed closures			
f. Agency staff	◯	◯	◯

35. Please indicate how your Critical Care bedside nurses receive support for professional development.
Please identify how often each approach is used, according to the scale provided.

	Frequently used (i.e.. >50% of the time)	**Sometimes used** (i.e.10-50% of the time)	**Rarely / never used** (i.e.. <10% of the time)
a. Paid conference registration (full or partial)	○	○	○
b. Payment of professional organization membership fees (full or partial)	○	○	○
c. Paid courses and certifications e.g. ACLS (full or partial)	○	○	○
d. Bursaries/scholarships	○	○	○
e. Community/foundation support	○	○	○
f. In-services during work hours	○	○	○
g. MOHLTC support e.g. Nurse Training Fund	○	○	○
h. Vendor support e.g. pharmaceutical, supply or equipment companies	○	○	○
i. Research grants	○	○	○

36. What recruitment strategies do you use to hire bedside nurses in your Critical Care unit?
Please identify how often each approach is used, according to the scale provided.

	Frequently used (i.e.. >50% of the time)	**Sometimes used** (i.e.10-50% of the time)	**Rarely / never used** (i.e.. <10% of the time)
a. Attending job fairs (either the hospital, or the unit)	○	○	○
b. Internship programs	○	○	○
c. Scholarship programs	○	○	○
d. Employee referral programs	○	○	○
e. Financial incentives	○	○	○
f. Mentorship programs	○	○	○
g. Flexible scheduling opportunities	○	○	○
h. Recruit internally from other units in hospital	○	○	○

Other (please specify)

37. What has proven to be the most *effective* recruitment strategies you use to hire bedside nurses from your Critical Care unit?

Please identify how effective each strategy is, according to the scale provided.

	Completely effective (i.e. identifies hires each time)	**Very effective** (i.e. identifies hires >50% times)	**Somewhat effective** (i.e. identifies hires 10%-50% of the time)	**Not effective** (i.e. identifies hires <10% of the time)
a. Attending job fairs (either the hospital, or the unit)	◯	◯	◯	◯
b. Internship programs	◯	◯	◯	◯
c. Scholarship programs	◯	◯	◯	◯
d. Employee referral programs	◯	◯	◯	◯
e. Financial incentives	◯	◯	◯	◯
f. Mentorship programs	◯	◯	◯	◯
g. Flexible scheduling opportunities	◯	◯	◯	◯
h. Recruit internally from other units in hospital	◯	◯	◯	◯

Other (please specify)

38.What retention strategies do you use to keep bedside nursing staff engaged within your Critical Care unit?

Please identify how often each strategy is used, according to the scale provided.

	Frequently used (i.e.10+ times per year)	**Periodically used** (i.e.3-9 times per year)	**Infrequently used** (. i.e. 1-2 times per year)	**Never used**
a. Employee recognition events - unit level	◯	◯	◯	◯
b. Long service recognition - unit level	◯	◯	◯	◯
c. Team building events e.g. pot lucks, seasonal events - unit level	◯	◯	◯	◯
d. Staff appreciation events - unit or hospital level	◯	◯	◯	◯
e. Flexible staff scheduling	◯	◯	◯	◯
f. Regular staff meetings with staff leadership	◯	◯	◯	◯
g. Unit council	◯	◯	◯	◯
h. Education/training events for staff	◯	◯	◯	◯
i. Scholarship programs	◯	◯	◯	◯
j. Preceptor program (≤3 months)	◯	◯	◯	◯
k. Preceptor program (> 3 months)	◯	◯	◯	◯
l. Mentorship program	◯	◯	◯	◯
m. Employee wellness initiatives – hospital level	◯	◯	◯	◯
n. Employee wellness initiatives – critical care specific	◯	◯	◯	◯
o. Exit interviews that are acted upon	◯	◯	◯	◯

Other (please specify)

39.What strategies do you believe are most *effective* for staff retention on your Critical Care unit?

Please identify how effective each strategy is, according to the scale provided.

	Very effective (i.e. perceive is valued by >75% of staff)	**Somewhat effective** (i.e. perceive is valued by 25-75%)	**Limited effect** (i.e. perceive is valued by <25% of staff)	**Not applicable** as this strategy is not used
a. Employee recognition events - unit level	◯	◯	◯	◯
b. Long service recognition - unit level	◯	◯	◯	◯
c. Team building events e.g. pot lucks, seasonal events -unit level	◯	◯	◯	◯
d. Staff appreciation events - unit or hospital level	◯	◯	◯	◯
e. Flexible staff scheduling	◯	◯	◯	◯
f. Regular staff meetings with staff leadership	◯	◯	◯	◯
g. Unit council	◯	◯	◯	◯
h. Education/training events for staff	◯	◯	◯	◯
i. Scholarship programs	◯	◯	◯	◯
j. Preceptor program (≤3 months)	◯	◯	◯	◯
k. Preceptor program (> 3 months)	◯	◯	◯	◯
l. Mentorship program	◯	◯	◯	◯
m. Employee wellness initiatives – hospital level	◯	◯	◯	◯
n. Employee wellness initiatives – critical care specific	◯	◯	◯	◯
o. Exit interviews that are acted upon	◯	◯	◯	◯

Other (please specify)

* 40. Acknowledgement:

◯ I have answered all questions on this page and would like to proceed to the next page

◯ I have not answered all questions on this page and would like to proceed to the next page (I understand that any questions left unanswered will be reflected as missing data)

ALLIED HEALTH PROFESSIONALS

Please remember to click SAVE AND NEXT at the bottom of each page, if you need to complete the survey in multiple sessions.

Please answer questions on this page relating to the Allied Health Support in your Critical Care unit for the period between April 1, 2017 and March 31, 2018.

41. (FOR NICU STAFF ONLY) What staffing model does your unit use for NICU patient transport between hospitals?

- ◯ a. Dedicated transport team scheduled separate from unit staffing
- ◯ b. Transport support from scheduled unit staffing as needed and available
- ◯ c. No transport support available from the unit

42. Recognizing the many team members that support critical care patients, please identify which Allied Health team members are ***routinely*** (e.g. daily or weekly) involved in care within your Critical Care unit. *Please check all that apply. Please do not include assistants or technicians.*

- a. Chaplain/Spiritual Care Providers/Pastoral Care
- b. Dietitian/Clinical Nutritionist
- c. Occupational Therapist
- d. Pharmacist
- e. Physiotherapist
- f. Respiratory Therapist
- g. Social Worker
- h. Lactation Consultant (For NICUs only)

Other (please specify)

43. For the selected disciplines in Q42 which disciplines have team members with consistent staff for your Critical Care unit vs. which disciplines have team members that are from a floating pool.

- ◯ a. Consistent staff members for our Critical Care Unit
- ◯ b. Floating pool of staff
- ◯ c. Not present in our unit

44. For the selected disciplines in Q42, please provide your Critical Care unit's approximate FTE allocation for each.

a. Chaplain/Spiritual Care Providers/Pastoral Care

b. Dietitian/Clinical Nutritionist

c. Occupational Therapist

d. Pharmacist

e. Physiotherapist

f. Respiratory Therapist

g. Social Worker

h. Lactation Consultant (For NICUs only)

i. Other

45.For the selected disciplines in Q39, please identify the weekday hours of coverage.
Please provide responses in each column and row.

	Average days per week	Average hours per day on the days with coverage	Provision of "on-call"
a. Chaplain/Spiritual Care Providers/Pastoral Care			
b. Dietitian/Clinical Nutritionist			
c. Occupational Therapist			
d. Pharmacist			
e. Physiotherapist			
f. Respiratory Therapist			
g. Social Worker			
h. Lactation Consultant (For NICUs only)			

46.For the selected disciplines in Q39, please identify the weekend hours of coverage.
Please provide responses in each column and row.

	Average days per weekend	Average hours per day on the days with coverage	Provision of "on-call"
i. Chaplain/Spiritual Care Providers/Pastoral Care			
j. Dietitian/Clinical Nutritionist			
k. Occupational Therapist			
l. Pharmacist			
m.Physiotherapist			
n.Respiratory Therapist			
o. Social Worker			
p. Lactation Consultant (For NICUs only)			

* 47. Acknowledgement:

- ( ) I have answered all questions on this page and would like to proceed to the next page
- ( ) I have not answered all questions on this page and would like to proceed to the next page (I understand that any questions left unanswered will be reflected as missing data)

Please remember to select SUBMIT at the bottom of this page to submit the survey.

Once submitted, the survey will be finalized and sent to CCSO for processing. If you wish to complete the survey at a later time, please ensure you have clicked "SAVE and NEXT" at the bottom of each page.

Thank you for completing the Critical Care Workforce Profile 2018 Unit Questionnaire.

References

8.2 Allied health workforce. (2013). Retrieved from http://www.health.gov.au/internet/publications/publishing.nsf/Content/work-review-australian-government-health-workforce-programs-toc~chapter-8-developing-dental-allied-health-workforce~chapter-8-allied-health-workforce

Advanced Cardiac Life Support (ACLS). (2017). from http://michener.ca/ce_course/advanced-cardiac-life-support-acls/

Bailey, N., Clark, M., Nordlund, M., Shelton, M., & Farver, K. (2012). New paradigm in nutrition support: using evidence to drive practice. *Crit Care Nurs Q, 35*(3), 255-267. doi: 10.1097/CNQ.0b013e3182542e30

Bardsley, H. D. a. M. (2014). Focus on: Allied health professionals. Can we measure quality of care? *Quality Watch Focus on:* (pp. 38). London: Nuffield Trust and the Health Foundation.

Baumann, A., Crea-Arsenio, M., Idriss-Wheeler, D., Hunsberger, M., & Blythe, J. . (2010). A Made-In-LHIN Solution: Identifying Local Needs in 70% Full-Time Nurse Employment. : Hamilton: McMaster Nursing Health Services Research Unit.

Blythe, J., & Baumann, A. (2009). Internationally educated nurses: profiling workforce diversity. *International Nursing Review, 56*(2), 191-197.

Boyce, R. A. (2001). Organisational governance structures in allied health services: a decade of change. *Aust Health Rev, 24*(1), 22-36.

Buchan, J., & Aiken, L. (2008). Solving nursing shortages: a common priority. *Journal of clinical nursing, 17*(24), 3262-3268.

. College of Nurses of Ontario, Membership Statistics Highlights. . (2015): College of Nurses of Ontario.

Colleges, A. o. C. C. (2012). Meeting Expectations: A Blueprint for Sustaining the Allied Health Professionals. Ottawa: Association of Canadian Community Colleges.

Committee, I. C. S. (2007). *Interprofessional Care: A blueprint for Action in Ontario*. Retrieved from http://ontariostrokenetwork.ca/wp-content/uploads/2013/08/ipc-blueprint-july-2007-en.pdf

Committee, I. C. S. I. (2010). *Implementing Interprofessional Care in Ontario.* . Retrieved from http://www.ipe.uwo.ca/Administration/teachings/HFO%20IPC%20Final%20Report%202010.pdf

Consulting, J. (2017). *Trends in Own Illness-or Disability-Related Absenteeism and Overtime among Publicly-Employed Registered Nurses: Quick Facts 2017*. Canadian Federation of Nurses Union Retrieved from https://nursesunions.ca/wp-content/uploads/2017/05/Quick_Facts_Absenteeism-and-Overtime-2017-Final.pdf.

Cuddy, A. (2018). Dietitian staffing levels in Ontario Hospitals: A report from the Dietitians of Canada Ontario Clinical Nutrition Leaders Action Group. *Dietitians of Canada*.

Estimates of population by census metropolitan area, sex and age group. . (2018).

Fund, T. K. s. (2013). Making the Most of Allied Health Professionals (pp. 14). UK: Center for Workforce Intelligence.

Hartman-Shea, K., Hahn, A. P., Fritz Kraus, J., Cordts, G., & Sevransky, J. (2011). The role of the social worker in the adult critical care unit: a systematic review of the literature. *Soc Work Health Care, 50*(2), 143-157. doi: 10.1080/00981389.2010.506411

Hayes, L. J., O'Brien-Pallas, L., Duffield, C., Shamian, J., Buchan, J., Hughes, F., & North N. (2012). Nurse turnover: a literature review - an update. *International Journal of Nursing Studies, 49*(7), 887-905.

Higginbottom, G. M. (2011). The transitioning experiences of internationally-educated nurses into a Canadian health care system: A focused ethnography. *BMC nursing, 10*(1), 14.

Kabene, S. M., Orchard, C., Howard, J. M., Soriano, M. A., & Leduc, R. (2006). The importance of human resources management in health care: a global context. *Hum Resour Health, 4*, 20. doi: 10.1186/1478-4491-4-20

Lankshear, S. (2018). Better together: A fresh look at collaboration within nursing. *Canadian Nurse*.
Laschinger, H. K. S. (2012). Job and career satisfaction and turnover intentions of newly graduated nures. *Journal of Nursing Management, 20*, 472-484.
Ma, C., & Stimpfel, A. W. (2018). The Association Between Nurse Shift Patterns and Nurse-Nurse and Nurse-Physician Collaboration in Acute Care Hospital Units. *J Nurs Adm, 48*(6), 335-341. doi: 10.1097/NNA.0000000000000624
Nash-Arnold, N. (2015, September 20, 2015). Do You Know Your Nursing Hours Per Patient Day. from http://www.nursemanagerhq.com/nursing-hours-per-patient-day/
Nurse Training Fund: Funding Analysis Report. (2013): Critical Care Services Ontario.
The Nursing Workforce Canadian Federation of Nurses Unions Backgrounder. (2012): Canadian Federation of Nurses Unions.
O'Brien-Pallas, L., Gail Tomblin Murphy, Judith Shamian, Xiaoqiang Li and Laureen J. Hayes. (2010). Impact and determinants of nurse turnover: a pan-Canadian study. *Journal of Nursing Management, 18*(8), 1073-1086.
OHRS V10.0 - Glossary of Terms - Secondary Statistical Accounts. (2016). Available from Health Data Branch, Data Standards Unit Ontario Health System Register. (OHRS Appendix H). from Ministry of Health and Long-Term Care https://www.champlainpathways.ca/wp-content/uploads/2017/05/OHRS_V10_0_Glossary_of_Terms_SSA_2016_17_FINAL_1_April_2016-FINAL.pdf
Oliver, P. D. (2014). *Allied Health Professionals: Key Players in Transforming our Health and Care Services*. Paper presented at the Enabling allied health professionals to lead and shape new models of care, The King's Fund, London W1G 0AN. https://www.kingsfund.org.uk/sites/files/kf/media/David%20Oliver%20pres.pdf
Ontario, C. C. S. (2016-17). Critical Care Nurse Training Fund Application Guide (pp. Appendix A).
Paterson J, P. a. M., M. (2014). Nursing Practice in Rural and Remote Ontario: An Analysis of CIHI's Nursing Database. *Prince George, BC, Nursing Practice in Rural and remote Canada*(RRN2), 01-05.
Pediatric Advanced Life Support (PALS). (2017). from https://resuscitation.heartandstroke.ca/courses/pals/description
Preslaski CR, L. I., MacLaren R, Poston J. (2013). Pharmacist contributions as members of the multidisiplinary ICU team. *Chest, 144*(5), 1687-1695.
Registered Nurses' Association of Ontario. (2010).
RN Workforce Profile by Area of Response. (2013): Canadian Nurses Association.
RNAO's 70 per cent Full-Time Employment for Nurses Survey: Hospital and Long-Term Care Sectors. (2014): Regestered Nurses' Association of Ontario.
Rondeau, K. V., Williams, E. S. And Wagar, T. H. (2009). Developing human capital: what is the impact on nurse turnover? *Journal of Nursing Management, 17*, 739-748.
Siela, D., Twibell, KR, Keller V. . (2008). The shortage of nurses and nursing faculty: what critical care nurses can do? *AACN Adv Crit Care, 19*(1), 66-77.
Stechmiller, J. K. (2002). The nursing shortage in acute and critical care settings. *AACN CL in Issues, 13*(4), 577-584.
Twomey, J. C., and Meadus, R. J. (2008). Despite the Barriers Men Nurses are Satisfied with Career Choices. *A Multi-Sectoral Approach to Career Development: A Decade of Canadian Research Une approche multisectorielle du developpement professionnel: Une decennie de recherche au Canada, 193*.
Workforce Profile of Registered Nurses in Canada. (2010): Canadian Nurses Association.
Workforce profile of registered nurses in canada. (2011).