

# Nursing Health Services Research Unit

A collaborative project of  
the University of Toronto  
Faculty of Nursing and  
McMaster University  
School of Nursing

Our mission is to develop,  
conduct and disseminate  
research that focuses on:

- design
- management
- utilization
- outcomes
- provision of nursing

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## *Nursing Health Services Research Unit McMaster University & University of Toronto*

### *Understanding Nursing Vacancies: A Key to Improved Nurse Utilization, Cost Effectiveness and Patient Outcomes*

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#### FACT SHEET

Nurse vacancies, as currently defined and measured, misrepresent the demand for nurses in the labour market. Lack of a standard definition of *nurse vacancy* renders nursing vacancy counts and vacancy rates inaccurate measures of nurse shortage. In isolation from data on nurse utilization and staffing practices, they can mask human and financial costs to the organization.

#### How can vacancies be better defined?

Vacant positions represent varying hours of work. Fisher (2005) and Baumann, Fisher, Blythe and Oreschina (2003) suggested that full-time equivalent (FTE) vacancies should be calculated to provide a standardized measure. Vacancy was redefined as a numerical value of vacant positions derived from the difference between budgeted hours and worked hours converted to FTE vacancies.

$$\text{FTE Vacancies} = \frac{\text{budgeted hours} - \text{worked hours}}{1950 \text{ hours (1 FTE)}}$$

Using this definition, the researchers surveyed 423 teaching, community and long-term care facilities in Ontario to determine: 1) the number of staff employed, vacant positions, approved budgeted hours and worked hours for Registered Nurses (RNs), Registered Practical Nurses (RPNs) and Health Care Aides (HCAs) at the full-time, part-time and casual levels; and 2) overtime and agency nursing hours during the 2002 budget year. FTE vacancies were calculated using the above formula. Based on an overall response rate of 46% (192/423), aggregate descriptive analysis of the data revealed:

- Hospitals varied greatly in their ability to provide the requested information.
- Reported vacant positions were considerably higher in all categories of worker at all three types of facility than the calculated FTE vacancies. This suggests possible over-reporting of vacant positions and/or alterations in the use of relief staffing strategies, which may have implications for nurse utilization, costs and patient outcomes.
- The use of part-time and casual RN staff at all three types of facility was above the provincial averages reported by CNO and CIHI.
- Reported overtime hours equated to 400 RN FTEs and 106 RPN FTEs. Assuming an average RN salary of \$50,000/year paid at time and a half, the potential cost for 400 RN FTEs of overtime is approximately \$30,000,000. This has implications for staffing costs, nurse satisfaction and patient outcomes.
- Reported agency nursing utilization equated to 345 RN FTEs and 87 RPN FTEs, an expense that could also increase staffing costs and have implications for nurse satisfaction and patient outcomes.
- RPN worked hours in the teaching and community hospitals and HCA worked hours in long-term care facilities were much higher than budgeted. Filling professional budgeted but unworked hours with other categories of health workers/professionals may suggest alterations in skill mix. Although cost efficient, this practice may impact staff satisfaction and patient outcomes.

**Why are “FTE vacancies” an improved expression of nurse vacancies?**

In their study of the previous nursing shortage in Ontario, Meltz and Marzetti (1988) stressed that vacancy counts and rates are inaccurate measures of nursing demand because they are based on full-time or regular part-time vacant positions. Staffing policies of organizations and vacancy management practices of individual frontline managers may create hidden financial costs, and influence nurse utilization, satisfaction and ultimately, availability. Regardless of the number of vacant positions a manager has on a given unit, patients require care, and frontline managers may employ relief staffing strategies to cover vacant position hours. These strategies may lead to greater human costs and/or financial expense than employing more full-time or regular part-time nurses.

Findings by Fisher (2005) and Baumann et al. (2003) support the view of Meltz and Marzetti (1988). These researchers clarify how nursing vacancies can be filled but still be counted as vacant positions by human resource and finance departments. Their expanded definition of nurse vacancy, incorporating budgeted versus worked hours, suggests a means of measuring nursing vacancies more accurately by ensuring the complexities of nurse staffing and utilization are part of the equation.

The formula could be made more specific and precise by sub-dividing worked hours into direct and indirect hours of care and relief staffing hours. Table 1 below outlines nursing staffing needs and the staffing strategies utilized on a typical nursing unit.

**Table 1: Staffing Needs and Staffing Strategies**

Staffing Needs	Staffing Strategies (Worked Hours)
<ol style="list-style-type: none"> <li>1. Direct care needs</li> <li>2. Indirect care needs</li> <li>3. Coverage for:               <ul style="list-style-type: none"> <li>- Unpaid leave</li> <li>- Sick time above budgeted hours</li> <li>- Maternity leave</li> <li>- Educational leave</li> <li>- Vacant positions</li> <li>- Bereavement leave</li> <li>- Pt. occupancy/acuity changes</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>1. Full-time worked hrs (FTWH)</li> <li>2. Regular part-time worked hrs (RPTWH)</li> <li>3. Relief staffing hrs:               <ul style="list-style-type: none"> <li>- Temporary &amp; casual part-time worked hrs (T&amp;CPTWH)</li> <li>- Overtime hrs (OTH)</li> <li>- Agency nursing hrs (ANH)</li> </ul> </li> <li>4. Alterations in skill mix: using less qualified or less skilled staff to fulfill staffing needs</li> </ol>

Based on the breakdown of worked hours, a following revised formula for FTE vacancy calculation is recommended:

$$\text{FTE Vacancies} = \frac{\text{Budgeted hrs} - (\text{FTWH} + \text{RPTWH} + \text{T\&CPTWH} + \text{OTH} + \text{ANH})}{1950 \text{ hrs (1 FTE)}}$$

Once calculated, FTE vacancies can be compared to position vacancies. The utilization of overtime and agency nurses is costly. It can also be stressful for individual nurses and lead to increased absenteeism and higher turnover rates. Simultaneously monitoring staffing strategies, FTE vacancies and vacant positions may improve decision making about when and where to increase full-time nursing levels, while balancing staffing budgets and more accurately quantifying nurse shortage. Additional research is required in individual acute/long term care organizations, to further test the development of this formula, and better understand the intricacies of nurse staffing and utilization as they relate to nurse satisfaction and availability, cost effectiveness and, ultimately, patient outcomes. As well, appropriate nursing staffing formulae such as this need to be adapted to and tested in the community and public health sectors.