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RNAO

Registered Nurses' Association of Ontario
L'Association des infirmières et infirmiers
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NURSING BEST PRACTICE GUIDELINES PROGRAM

Healthy Work Environments Best Practice Guidelines

Developing and Sustaining Effective Staffing and Workload Practices



Ontario



Greetings from Doris Grinspun, Executive Director Registered Nurses' Association of Ontario

It is with great pleasure that the Registered Nurses' Association of Ontario releases the "Developing and Sustaining Effective Staffing and Workload Practices" Guideline. This is one of a series of six Best Practice Guidelines (BPGs) on Healthy Work Environments (HWE), developed by the nursing community. The aim of these guidelines is to provide the best available evidence to support the creation of thriving work environments.

Evidence-based HWE BPGs, when applied, will serve to support the excellence in service that nurses are committed to delivering in their day-to-day practice. RNAO is delighted to be able to provide this key resource to you.

We offer our endless gratitude to the many individuals and organizations that are making our vision for HWE BPGs a reality. To the Government of Ontario and Health Canada for recognizing RNAO's ability to lead this program and providing generous funding. To Donna Tucker – Program Director from 2003 to 2005, and Irmajean Bajnok – Director, Centre for Professional Nursing Excellence and the program's lead since 2005, for providing wisdom and working intensely to advance the production of these HWE BPGs. To Pauline Matthews, HWE Program Assistant for the endless hours of unwavering support and committed work. To each and all HWE BPG leaders and in particular, for this BPG, Panel Co-Chairs Linda O'Brien-Pallas, Donna Thomson and Phyllis Giovannetti, and Panel Coordinator Val Coubrough, for providing superb stewardship, commitment and above all exquisite expertise. Thanks also go to the amazing Panel Members who generously contributed their time and knowledge. We could not have delivered such a quality resource without you!

We thank in advance the entire nursing community, committed and passionate about excellence in nursing care and healthy work environments, who will now adopt these BPGs and implement them in their worksites. We ask that you evaluate their impact and tell us what works and what doesn't, so that we continuously learn from you, and revise these guidelines informed by evidence and practice. Partnerships such as this one are destined to produce splendid results – learning communities – all eager to network and share expertise. The resulting synergy will be felt within the BPG movement, in the workplaces, and by people who receive nursing care.

Creating healthy work environments is both a collective and an individual responsibility. Successful uptake of these guidelines requires the concerted effort of nurse administrators, staff and advanced practice nurses, nurses in policy, education and research, and health care colleagues from other disciplines across the organization. It also requires full institutional support from CEO's and their Boards. We ask that you share this guideline with all. There is much we can learn from one another.

Together, we can ensure that health organizations including nurses and all other health care workers, build healthy work environments. This is central to ensuring quality patient care. Let's make health care providers, their organizations and the people they serve the real winners of this important effort!

Doris Grinspun, RN, MSN, PhD (c), O.ONT.

A handwritten signature in dark ink that reads "Doris Grinspun". The signature is fluid and cursive, with a long horizontal stroke at the end.

Executive Director
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The Registered Nurses' Association of Ontario (RNAO), with funding from the Ministry of Health and Long-Term Care and in partnership with Health Canada, has embarked on a multi-year project of healthy work environments best practice guidelines development, pilot implementation, evaluation and dissemination that will result in guidelines developed by expert panels. This guideline was developed by an expert panel convened by the RNAO, conducting its work independent of any bias or influence from funding agencies. The panel was supported by members of the RNAO project team as listed below.

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* Throughout this document words marked with the symbol G can be found in the Glossary.



Background to the Healthy Work Environments Best Practice Guidelines Project

In July of 2003 the Registered Nurses' Association of Ontario (RNAO), with funding from the Ontario Ministry of Health and Long-Term Care (MOHLTC), working in partnership with Health Canada, Office of Nursing Policy, commenced the development of evidence-based best practice guidelines in order to create healthy work environments^c for nurses.^c Just as in clinical decision-making, it is important that those focusing on creating healthy work environments make decisions based on the best evidence possible.

The Healthy Work Environments Best Practice Guidelines^c Project is a response to priority needs identified by the Joint Provincial Nursing Committee (JPNC) and the Canadian Nursing Advisory Committee.¹ The idea of developing and widely distributing a healthy work environment guide was first proposed in *Ensuring the care will be there: Report on nursing recruitment and retention in Ontario*² submitted to MOHLTC in 2000 and approved by JPNC.

Health care systems are under mounting pressure to control costs and increase productivity while responding to increasing demands from growing and aging populations, advancing technology and more sophisticated consumerism. In Canada, health care reform is currently focused on the primary goals identified in the Federal/Provincial/Territorial First Ministers' Agreement 2000,³ and the Health Accords of 2003⁴ and 2004⁵:

- the provision of timely access to health services on the basis of need;
- high quality, effective, patient/client-centered and safe health services; and
- a sustainable and affordable health care system.

Nurses are a vital component in achieving these goals. A sufficient supply of nurses is central to sustain affordable access to safe, timely health care. Achievement of healthy work environments for nurses is critical to the safety, recruitment and retention of nurses.

Numerous reports and articles have documented the challenges in recruiting and retaining a healthy nursing workforce.^{2, 6-10} Some have suggested that the basis for the current nursing shortage is the result of unhealthy work environments.¹¹⁻¹⁴ Strategies that enhance the workplaces of nurses are required to repair the damage left from a decade of relentless restructuring and downsizing.

There is a growing understanding of the relationship between nurses' work environments, patient/client⁶ outcomes and organizational and system performance.¹⁵⁻¹⁷ A number of studies have shown strong links between nurse staffing⁶ and adverse patient/client outcomes.¹⁸⁻²⁸ Evidence shows that healthy work environments yield financial benefits to organizations in terms of reductions in absenteeism, lost productivity, organizational health care costs²⁹ and costs arising from adverse patient/client outcomes.³⁰

Achievement of healthy work environments for nurses requires transformational change, with "interventions that target underlying workplace and organizational factors".³¹ It is with this intention that we have developed these guidelines. We believe that full implementation will make a difference for nurses, their patients/clients and the organizations and communities in which they practice. It is anticipated that a focus on creating healthy work environments will benefit not only nurses but other members of the health care team⁶. We also believe that best practice guidelines can be successfully implemented only where there are adequate planning processes, resources, organizational and administrative supports, and appropriate facilitation.

The project will result in six Healthy Work Environments Best Practice Guidelines

- Collaborative Practice Among Nursing Teams
- Developing and Sustaining Effective Staffing and Workload Practices
- Developing and Sustaining Nursing Leadership
- Embracing Cultural Diversity in Health Care: Developing Cultural Competence
- Professionalism in Nursing
- Workplace Health, Safety and Well-being of the Nurse

*“ A healthy work environment is...
...a practice setting that maximizes the health
and well-being of nurses, quality patient/client
outcomes, organizational performance and
societal outcomes. ”*

Organizing Framework for the Healthy Work Environments Best Practice Guidelines Project

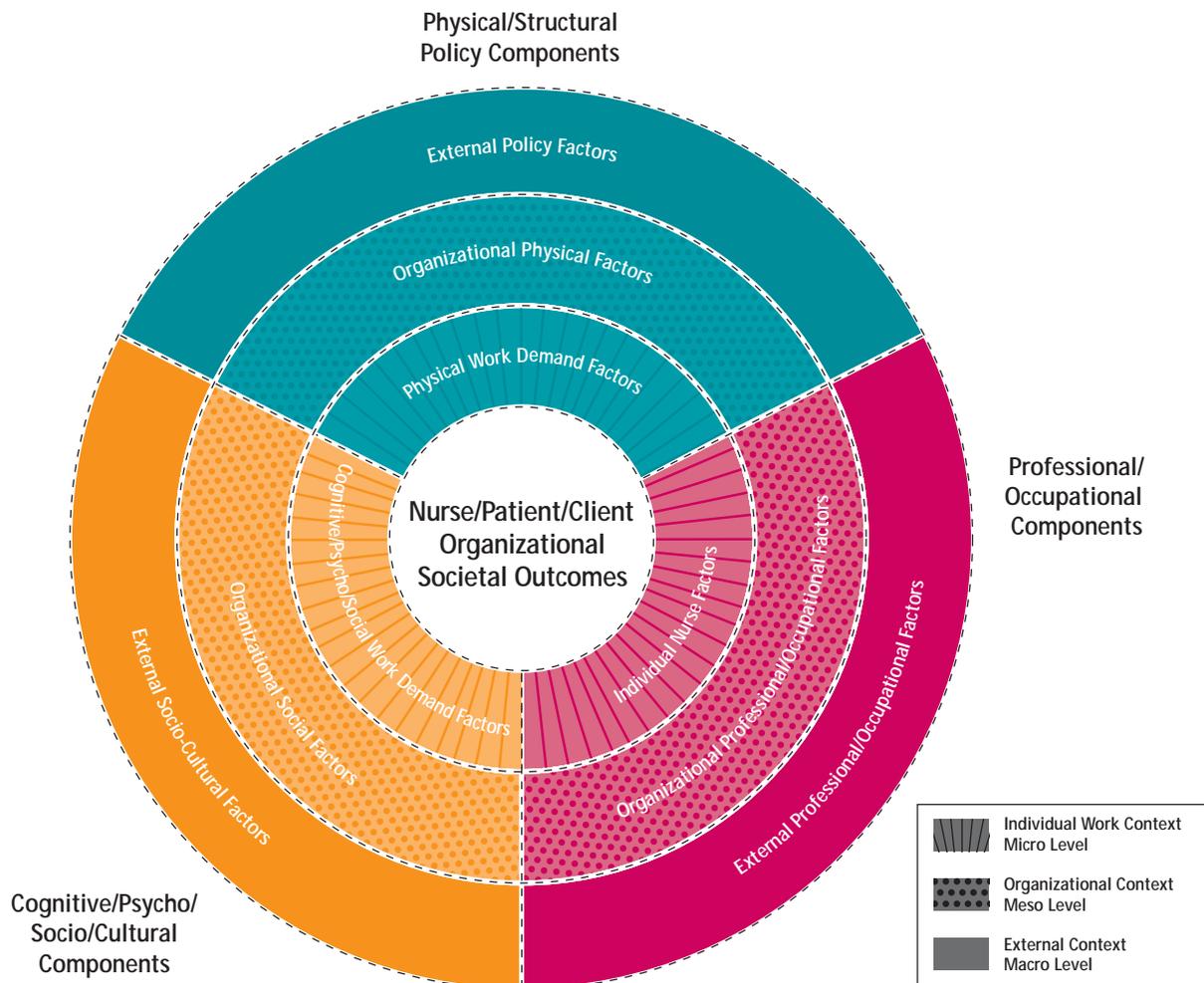


Figure 1. Conceptual Model for Healthy Work Environments for Nurses – Components, Factors & Outcomesⁱ⁻ⁱⁱⁱ

A healthy work environment for nurses is complex and multidimensional, comprised of numerous components and relationships among the components. A comprehensive model is needed to guide the development, implementation and evaluation of a systematic approach to enhancing the work environment of nurses. Healthy work environments for nurses are defined as practice settings that maximize the health and well-being of the nurse, quality patient/client outcomes, organizational performance and societal outcomes.

The Comprehensive Conceptual Model for Healthy Work Environments for Nurses presents the healthy workplace as a product of the interdependence among individual (micro level), organizational (meso level) and external (macro level) system determinants as shown above in the three outer circles. At the core of the circles are the expected beneficiaries of healthy work environments for nurses – nurses, patients/clients, organizations and systems, and society as a whole, including healthier communities.^{iv} The lines within the model are dotted to indicate the synergistic interactions among all levels and components of the model.

The model suggests that the individual's functioning is mediated and influenced by interactions between the individual and her/his environment. Thus, interventions to promote healthy work environments must be aimed at multiple levels and components of the system. Similarly, interventions must influence not only the factors within the system and the interactions among these factors but also influence the system itself.^{v,vi}

The assumptions underlying the model are as follows:

- healthy work environments are essential for quality, safe patient/client care;
- the model is applicable to all practice settings and all domains of nursing;
- individual, organizational and external system level factors are the determinants of healthy work environments for nurses;
- factors at all three levels impact the health and well-being of nurses, quality patient/client outcomes, organizational and system performance, and societal outcomes either individually or through synergistic interactions;
- at each level, there are physical/structural policy components, cognitive/psycho/social/cultural components and professional/occupational components; and
- the professional/occupational factors are unique to each profession, while the remaining factors are generic for all professions/occupations.

i Adapted from DeJoy, DM & Southern, DJ. (1993). An Integrative perspective on work-site health promotion. *Journal of Medicine*, 35(12): December, 1221-1230; modified by Laschinger, MacDonald & Shamian (2001); and further modified by Griffin, El-Jardali, Tucker, Grinspun, Bajnok, & Shamian (2003).

ii Baumann, A., O'Brien-Pallas, L., Armstrong-Stassen, M., Blythe, J., Bourbonnais, R., Cameron, S., Irvine Doran D., et al. (2001, June). *Commitment and care: The benefits of a healthy workplace for nurses, their patients, and the system*. Ottawa, Canada: Canadian Health Services Research Foundation and The Change Foundation.

iii O'Brien-Pallas, L., & Baumann, A. (1992). Quality of nursing worklife issues: A unifying framework. *Canadian Journal of Nursing Administration*, 5(2):12-16.

iv Hancock, T. (2000). The Healthy Communities vs. "Health" . *Canadian Health Care Management*, 100(2):21-23.

v Green, LW., Richard, L. and Potvin, L. (1996). Ecological foundation of health promotion. *American Journal of Health Promotion*, 10(4): March/April, 270-281

vi Grinspun, D. (2000). *Taking care of the bottom line: shifting paradigms in hospital management*. In Diana L. Gustafson (ed.), *Care and Consequence: Health Care Reform and Its Impact on Canadian Women*. Halifax, Nova Scotia, Canada. Fernwood Publishing.

Physical/Structural Policy Components

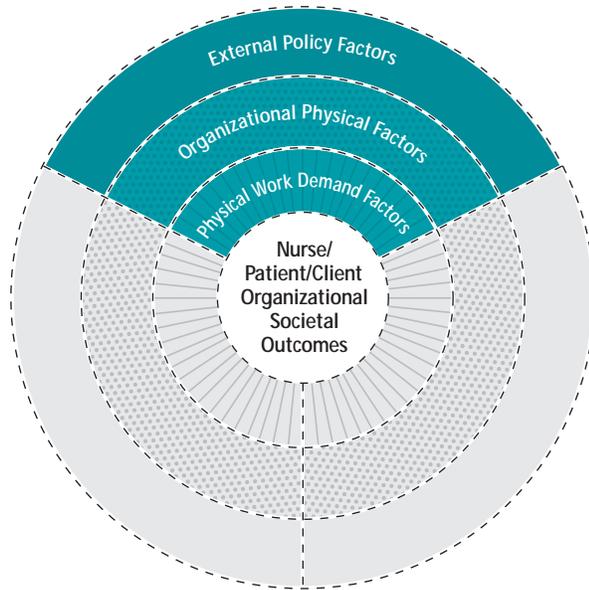


Figure 1A

Physical/Structural Policy Components

- At the individual level, the Physical Work Demand Factors include the requirements of the work which necessitate physical capabilities and effort on the part of the individual.^{vii} Included among these factors are workload, changing schedules and shifts, heavy lifting, exposure to hazardous and infectious substances, and threats to personal safety.
- At the organizational level, the Organizational Physical Factors include the physical characteristics and the physical environment of the organization and also the organizational structures and processes created to respond to the physical demands of the work. Included among these factors are staffing practices, flexible and self-scheduling, access to functioning lifting equipment, occupational health and safety policies, and security personnel.
- At the system or external level, the External Policy Factors include health care delivery models, funding, and legislative, trade, economic and political frameworks (e.g. migration policies, health system reform) external to the organization.

vii Grinspun, D. (2002). *The Social Construction of Nursing Caring*. Unpublished Doctoral Dissertation Proposal. York University, North York, Ontario.

Cognitive/Psycho/Socio/Cultural Components

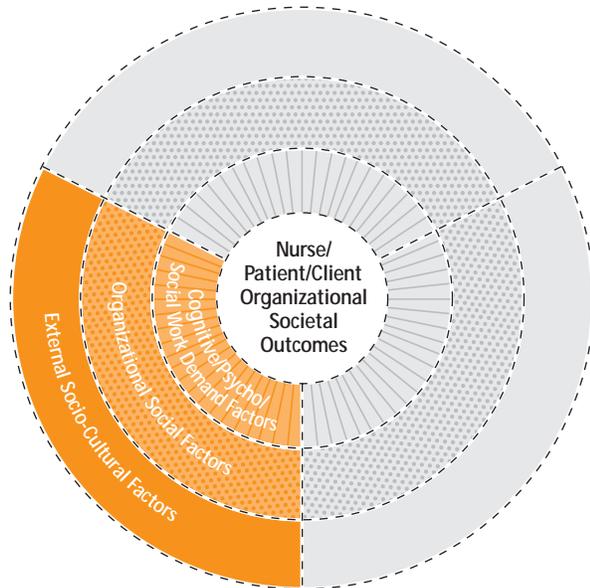


Figure 1B

Cognitive/Psycho/Socio/Cultural Components

- At the individual level, the Cognitive and Psycho-social Work Demand Factors include the requirements of the work which necessitate cognitive, psychological and social capabilities and effort (e.g. clinical knowledge, effective coping skills, communication skills) on the part of the individual.^{vi} Included among these factors are clinical complexity, job security, team relationships, emotional demands, role clarity, and role strain.
- At the organizational level, the Organizational Social Factors are related to organizational climate, culture, and values. Included among these factors are organizational stability, communication practices and structures, labour/management relations, and a culture of continuous learning and support.
- At the system level, the External Socio-cultural Factors include consumer trends, changing care preferences, changing roles of the family, diversity of the population and providers, and changing demographics – all of which influence how organizations and individuals operate.

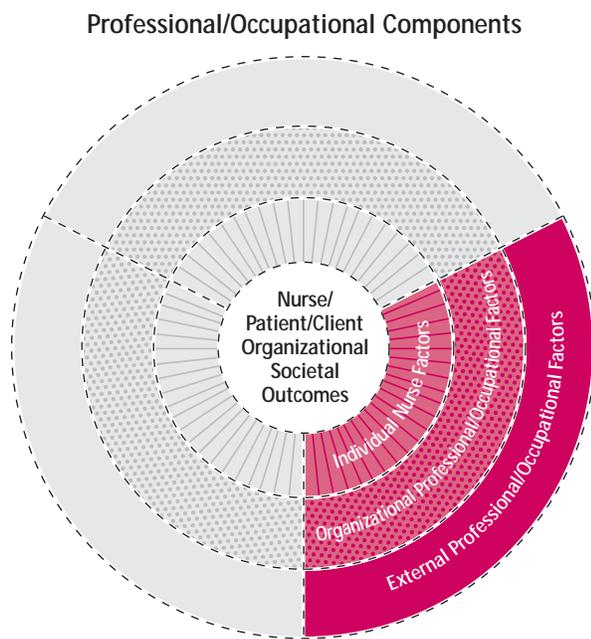


Figure 1C

Professional/Occupational Components

- At the individual level, the Individual Nurse Factors include the personal attributes and/or acquired skills and knowledge of the nurse which determine how she/he responds to the physical, cognitive and psycho-social demands of work.^{vii} Included among these factors are commitment to patient/client care, the organization and the profession; personal values and ethics; reflective practice; resilience, adaptability and self confidence; and familywork/life balance.
- At the organizational level, the Organizational Professional/Occupational Factors are characteristic of the nature and role of the profession/occupation. Included among these factors are the scope of practice, level of autonomy and control over practice, and intradisciplinary relationships.
- At the system or external level, the External Professional/Occupational Factors include policies and regulations at the provincial/territorial, national and international level which influence health and social policy and role socializations within and across disciplines and domains.

Background Context of the Guideline on Developing and Sustaining Effective Staffing and Workload Practices

Workload expectations of nurses in today's health care settings often exceed staffing levels and capacity.³² In addition, their work environments are characterized by higher levels of patient/client acuity, a more sophisticated public with respect to care expectations, augmented use of technology-based interventions, a plethora of new evidence that affects care, and a more complex, interdependent and diverse health care team. These factors all contribute to an ever more stressful and unpredictable environment for the entire health care team, including nurses. The comprehensive nature of nursing roles has added further challenges that have made staffing allocation or decisions about the optimal number of nurses required to meet patients'/clients' needs, a highly complex matter.³²

Questions surrounding the optimal number of nursing personnel required to meet the needs of patients/clients in a safe, competent and ethical manner are not new. Indeed, they existed during the time of Florence Nightingale and were hotly debated when her requests for more nurses were not immediately met. Nightingale exercised her professional judgment to determine how many nurses were required, and the number she was able to employ was no doubt influenced by her negotiating skill, coupled with the constraints imposed by the economic and market conditions of the time. As reported by Giovannetti³³, one of the first attempts to quantify nurse staffing levels was directed by the National League of Nursing Education in the United States (U.S.) in 1937. Based on a survey of 50 selected hospitals in New York City, the median number of hours of bedside nursing care was 3.4 to 3.5 per patient day. On the basis of this finding, the League recommended that this range (3.4 to 3.5) be considered a minimum for staffing levels, "...not because they are known to be right but because it would appear to be a practical recommendation for the present".³³

Along with this recommendation, the investigators identified the need for further information based upon sound investigation of the factors essential for organizing and evaluating hospital nursing services, and for determining the optimal number of nursing hours for the various types of ward patients. Little attention was paid to the suggestions for further study or the limitations of the survey methods employed, and 3.4 to 3.5 hours per patient day became widely accepted as a staffing standard across North America and elsewhere. Almost 30 years later, a survey of randomly selected hospitals in Canada revealed that the standard most commonly accepted for estimating nursing staff requirements was 3.5 hours of care per day.^{34,35}

The scientific challenge to the use of global staffing standards came primarily from work conducted at The Johns Hopkins Hospital, Baltimore, Maryland, in the 1960s. Connor³⁶ and Wolfe and Young^{37,38} appear to be the first to demonstrate scientifically what had been known by nurses experientially and intuitively for years – some patients/clients require more nursing care than others, the demand for nursing care is not a function of census alone and the variation in nursing workload is independent of the ward or nursing unit^c.

In conducting this work, Connor developed a simple three-category patient classification system based on the physical and emotional care needs of the patient/client. This template served to generate a proliferation of both institution-specific and proprietary staffing systems that became, in many cases, the sole source for projecting staffing levels. While many of these systems remain today, they fall short of capturing the myriad factors, in addition to patients'/clients' requirements for direct nursing care, that affect staffing requirements.

In recruitment and retention surveys as well as research studies, nurses have indicated that they are unable to provide the required care elements consistent with standards defined by professional and regulatory bodies. One report noted that the result for administration and nursing staff is “moral distress when they cannot find adequate numbers of qualified staff to deliver safe care”.³⁹ According to Baumann and colleagues, “research has made it clear that problems with nurses’ work and work environments, including stress, heavy workloads, long hours, injury and poor relations with other professions, can alter their physical and psychological health.”⁸

Collectively, this state of staffing and workload disequilibrium results in negative outcomes for patients/clients, (i.e. higher morbidity/mortality rates, failure to rescue, resulting in longer lengths of stay), nurses (i.e. job strain, increased levels of moral distress, illness and injury) and organizations (i.e. recruitment and retention challenges, overtime, absenteeism).⁴⁰ The recession of the 1990s led to financial cutbacks for health care systems in many countries. Since nursing represents the largest base budget in many organizations, the 1990s were seen as a time of layoffs and reductions in nursing personnel required to provide quality care. As the financial restrictions tightened, many nurses felt increasing stress and dissatisfaction with their work. Aiken et al.⁴¹ noted that more than 33% of nurses in Canada were in the high burnout category at the time. The evidence suggests that significant and immediate changes regarding staffing and workloads must be made to improve the quality of working lives for nurses and ensure that patients/clients receive safe, effective and ethical care, consistent with quality standards.⁴¹



The primary focus in creating a professional practice environment for nurses must be patient/client centricity. To this end, nurses and health care organizations must ask, “What is best for our patient/client?”⁴² The current body of knowledge reinforces the correlation between patient/client outcomes and the practice environments of nurses. Consequently, the Healthy Work Environments Best Practice Guideline on *Developing and Sustaining Effective Staffing and Workload Practices* is focused on the changes needed in practice, education and policy to create quality working environments that provide:

- **effective and collaborative workload planning^c and management strategies;**
- **valid and reliable tools and methodologies to predict, measure and validate nursing workload;**
- **appropriate nursing productivity indicators;**
- **reasonable work assignments such that nurses are not functioning beyond their individual productivity capacity;**
- **appropriate equipment and tools to carry out nursing work;**
- **adequate staff to perform all the required elements of care and deliver support activities;**
- **an appropriate mix of professional^c nursing staff practicing to their full scope; and**
- **development and education opportunities to maintain and enhance professional competencies.**

The Academy of Canadian Executive Nurses (ACEN)⁴³ believes nursing workload is critical to ensuring patient/client safety and retention of adequate numbers of nurses for Canada, and also to ensuring that nurses are able to fulfill the mandate for care, teaching, research and innovation. The final report of the Canadian Nursing Advisory Committee (CNAC)⁴⁴ states:

“Simply put, as nursing goes, so goes the rest of the system. The importance of improving nursing working conditions is clear as is the need to engage in substantive action and funding investment in order to make the significant, sustained changes required.” The urgency communicated by ACEN⁴³, CNAC⁴⁴ and the Canadian Nursing Sector Study⁴⁵ is acknowledged and RNAO has recognized the need to develop evidence-based best practice guidelines to assist nurses, nursing leaders, nursing executives, and policy makers to effectively address the critical issues of staffing and workload, in order to improve patient/client and system outcomes.

The recommendations presented in this document are based on the best available evidence and provide employers and nurses with solid strategies to maximize their collaborative efforts to effect positive outcomes through effective staffing and workload management^c.

In the health care environment there is increasing need for cost effective measures that produce positive outcomes for patients/clients, nurses and health care organizations alike.⁴⁶ Determining optimal staffing requirements is a complex issue and the literature on the topic suggests that the debate continues on the most effective strategies to manage nursing workload. Integrative reviews^c in the past decade have focused on the effect of nurse staffing levels and skill mix and the potential to effect positive outcomes for patients/clients, nurses and organizations. The comprehensive systematic review^c conducted to support the development of this guideline considered research papers (both qualitative and quantitative) focused on staffing and workload concepts (i.e. feasibility, meaningfulness and effectiveness) that are linked to healthy work environments for nurses.⁴⁶

The international body of knowledge related to quality of work life for nurses has grown exponentially over the past decade. Numerous reports and articles document the challenges of recruiting and retaining a nursing workforce in the midst of health system⁶ changes and in the context of balancing care, quality and cost.

Selected Canadian reports include:

- **Building the Future: an integrated strategy for nursing human resources in Canada. Phase Two, final report. Nursing Sector Study Component.**⁴⁷
- **Building the Future: an integrated strategy for nursing human resources in Canada. Phase One, final report. Nursing Sector Study Component.**⁴⁸
- **Evidence-based Standards for Measuring Nurse Staffing and Performance. Final Research Report commissioned by the Canadian Health Services Research Foundation and the Change Foundation**⁴⁰
- **Our health, our future: Creating quality workplaces for Canadian Nurses. Final report of the Canadian Nursing Advisory Committee**⁴⁴
- **Ensuring the care will be there: Report on nursing recruitment and retention in Ontario**²
- **Commitment and Care: The benefits of a healthy workplace for nurses, their patients and the system. A policy synthesis commissioned by the Canadian Health Services Research Foundation and the Change Foundation**⁸
- **Good Nursing, Good health: An investment in the 21st century. Report of the Nursing Task Force**¹⁰

While a number of successful efforts have focused on recruitment into the nursing profession, it is clear that attention must also be paid to retention. The working environment of nurses has been described in the literature, and by nurses themselves, as chaotic, stressful and fast paced. In one survey, 45% of Canadian registered nurses (RNs) said the quality of care in their hospital had deteriorated in the past year.⁴¹ Nursing, technical and support staff working in the health care profession have the highest number of days lost due to illness or injury of any other occupation, at double or greater than the national average.⁴⁹ This indicator of work environment quality has not been successfully addressed over the past five years. The cost of overtime, absentee wages and replacement for RN absentees is estimated to be between \$962 million and \$ 1.5 billion annually in Canada.⁴ Thus, it is not surprising that nursing leaders are focusing their efforts on creating healthier work environments aimed at decreasing the incidence of sick time, high turnover rates, and dissatisfied nurses, all of which negatively affect the quality of patient/client care. The literature consistently demonstrates a correlation between the quality of the practice environments for nurses and the quality of patient/client care, as well as job satisfaction and productivity.^{18,50-53}

Just as in clinical decision-making, it is important that those focusing on creating healthy work environments make the best evidence-based decisions possible. To facilitate the creation of healthy work environments RNAO has developed an approach to the development, implementation, dissemination and evaluation of best practices. The approach is buttressed by a definition of Healthy Work Environments, a conceptual model, and best practice guidelines. This guideline on *Developing and Sustaining Effective Staffing and Workload Practices* is one aspect of this concerted approach to create healthy work environments in health care.

Purpose and Scope

In November 2003, a panel of nurses with expertise in human health resource research and effective staffing and workload management from institutional, community and educational settings was convened under the auspices of the RNAO. At the outset, the panel established the scope of this best practice guideline through a process of discussion and consensus^c. In addition to defining the scope and purpose, the guideline development panel:

- reviewed and selected a conceptual framework;
- developed a comprehensive literature review protocol;
- identified and defined key terminology associated with the guideline;
- analyzed the results of the comprehensive literature review;
- provided a background context;
- developed recommendations; and
- sought stakeholders' feedback.

The guideline was developed to identify and describe:

- Staffing and workload practices that foster healthy work environments resulting in better outcomes for nurses.
- System resources that support healthy staffing and workload practices.
- Organizational cultures^c, values and resources that support effective staffing and workload practices.
- Outcomes of effective staffing and workload practices.

This guideline is not intended to replace existing workload measurement systems^c, prescribe staffing levels or provide a formula to determine the “correct” number and combination of nursing personnel. Rather, its purpose is to assist nurses, nursing leaders and senior management teams to enhance positive outcomes for patients/clients, nurses and the organization by:

- Identifying best practices that effectively address environmental complexities that contribute to nursing workload.
- Making recommendations regarding organizational structures and processes needed by organizations necessary to implement and achieve manageable workloads for nurses.
- Recommending staffing models to achieve positive outcomes.
- Providing an assessment framework of evidenced-based factors to assist organizations in making appropriate staffing decisions.

The guideline addresses:

- Knowledge, competencies and behaviours that support effective staffing and workload practices.
- Educational requirements and strategies that support effective staffing and workload practices.
- Organizational, operational and system policy requirements that support effective staffing and workload practices.
- Future research opportunities.

This guideline is relevant to:

- nurses in all sectors, in all roles including clinical nurses, administrators, educators, researchers and those engaged in policy work, as well as nursing students;
- interdisciplinary team members;
- administrators at the unit, organizational and system level;
- policy makers and governments; and
- professional organizations, employers and labour groups.



How to use this Document

This Healthy Work Environments (HWE) Best Practice Guideline (BPG) is an evidence-based document that describes strategies for developing and sustaining effective staffing and workload practices for nurses.

The guideline contains much valuable information but is not intended to be read and applied all at once. We recommend that readers review and reflect on the document and implement the recommendations as appropriate for their unit of work or organization. The following approach may be helpful:

1. **Study the HWE Organizing Framework and the Patient Care Delivery Systems Model:** The *Developing and Sustaining Effective Staffing and Workload Practices* BPG is built upon the HWE BPG Organizing Framework that was created for the project, to enable users to understand the relationships between and among the key factors involved in creating healthy work environments. The *Developing and Sustaining Effective Staffing and Workload Practices* for nurses BPG was created to highlight the myriad factors and their relationships that influence staffing decision-making. Understanding these aspects are critical to using the guideline effectively. We suggest that you spend time reading and reflecting upon both the framework and model as a first step.
2. **Identify an area of focus:** Once you have studied the framework and model, we suggest that you identify an area of focus for yourself, your situation, or your organization. Select an area that you believe requires attention to strengthen the effectiveness of developing and sustaining effective staffing and workload practices.
3. **Read the recommendations and the summary of evidence for your area of focus:** A number of evidence-based recommendations are offered focusing on the health system and organizational levels. The recommendations are statements of what the system, organization and nurses should do or policies that should be in place for developing and sustaining effective staffing and workload practices. The literature supporting these recommendations is briefly summarized, and we believe you will find it helpful to read this summary to understand the rationale for the recommendations.
4. **Focus on the recommendations or desired behaviours that seem most appropriate in your current situation:** The recommendations contained in this document are not meant to be applied as rules, but rather as tools to assist individuals, teams, or organizations in making decisions that improve staffing and workload practices while recognizing there is much information to consider.
5. **Form a plan:** Having selected a specific set of recommendations for attention, consider the strategies required to successfully implement them. If you need more information, refer to some of the references cited.

6. **Discuss the plan with others:** Take time to solicit input from, and involve those who will be affected by the plan, those whose engagement will be critical to success, and relevant experts, who will provide feedback on the appropriateness of your plan. This is an important phase for the development of effective staffing and workload practices at the team, unit and organizational levels.
7. **Revise your plan and get started:** It is important that you make adjustments as you proceed with implementation of this guideline. The development of effective staffing and workload practices is a team effort that involves management and staff, and requires long-term commitment.



Overview of the Patient Care Delivery Systems Model Related to Promoting Effective Staffing and Workload Practices

The Patient Care Delivery Systems Model⁴⁰ related to promoting effective staffing and workload practices is an open-system model based on more than 15 years of research. This model, which reflects open systems theory, is similar to that of Doran et al.⁵⁴, underpinning the Nursing Role Effectiveness Model, which is in turn based on the Donabedian model of quality care.⁵⁵ Factors, variables and influences in the Doran model were grouped under the headings – structure, process and outcomes.

Building on the early work of Jelinek⁵⁶, O'Brien-Pallas et al. first developed the Patient Intensity and Complexity of Care model to support effective staffing decision-making.⁵⁷ With further testing, a full open systems model was developed for patient/client care in the community.^{58,59} The model (see pg. 28) was developed and tested in 2003 in the hospital setting. Consistent with systems theory, the patient/client care delivery model reflects dynamic interaction with the constantly changing environment of practice.

Patient/Client care delivery systems are highly complex. They include a variety of inputs incorporating patients/clients, nurses and system characteristics, as well as the multiple interactions among these components. These inputs, coupled with critical nursing processes such as models of care, nursing leadership^c, nursing infrastructures, as well as environmental complexity factors, result in a range of outcomes for patients/clients, providers and systems.

The staffing decision-making processes based on this model incorporate the following factors:

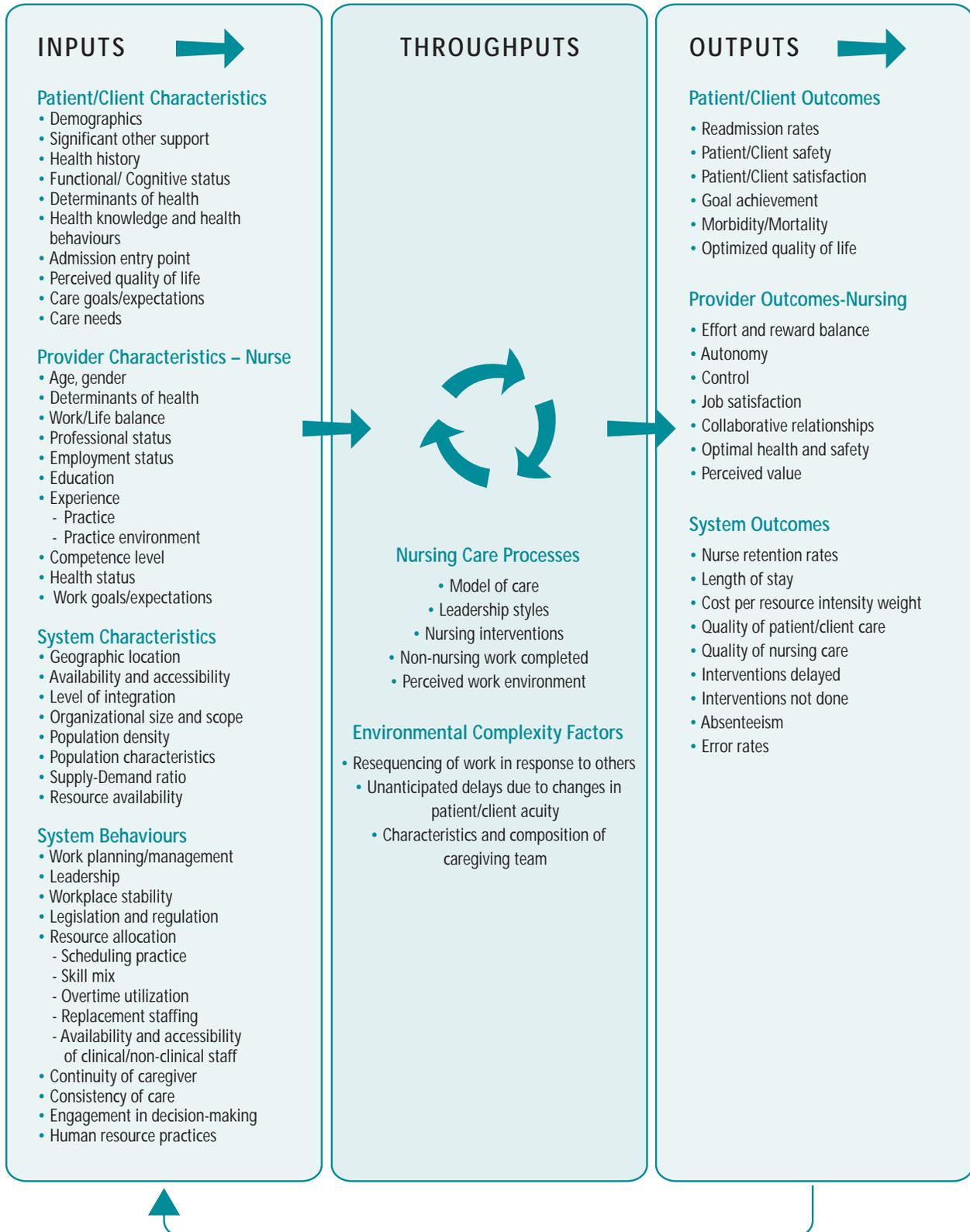
- The individual workload planning^c and management competencies of nurses vary between nurses and across categories of nursing professionals^c (i.e. RNs and RPNs/LPNs), as well as across nursing leadership functions (i.e. Resource Nurse, Nurse Managers and Nursing Executives).
- Competencies are based on knowledge, skills, attitudes, critical analysis and decision-making, which are enhanced throughout an individual's professional career by experience and education.
- “Workload equilibrium” depends on an appropriate patient/client care delivery system. Such a system reflects a coordinated interdisciplinary approach incorporating ongoing communication between health professionals and patients/clients, ever mindful of the personal preferences and unique needs of each individual patient/client and the individual and collective capacity of the nursing personnel.

In staffing decision-making it is expected that:

- Individual nurses will perform within their competencies.
- All nurses will seek appropriate consultation with senior management in instances where nurse staffing and performance are incongruent with patient/client needs and desired patient/client, nurse and organizational outcomes.

Understanding the model of patient/client care delivery systems enables appreciation of the highly complex nature of staffing decision-making.

The Patient Care Delivery Systems Model



Levels of Decision-making Related to Promoting Effective Staffing and Workload Practices

The goal of the staffing process is efficient and effective use of nursing human resources. The Patient Care Delivery Systems Model⁴⁰ isolates the variables that must be considered to promote efficient and effective utilization^c of nursing human resources, which in turn leads to a healthy work environment. A healthy work environment in turn, leads to best patient/client, nurse and system outcomes. To ensure that these outcomes occur, information systems and measures must be utilized at all three levels of decision-making, to guide the decision processes.

The mission of all staffing (strategic, logistical and tactical) decision-making is to track information that matches the variability in demands for nursing care and the staff available to provide care. Nursing staff must not work beyond capacity (i.e. understaffing) and must work to full scopes of practice to enable healthy work environments. All adjustments starting with the demand for care must be based on these premises. All of this is subsumed in the efficient and effective use of nursing resources.

Within the staffing process, decisions are made by all nursing staff on an ongoing basis and include nurse staffing decision-making^c and patient/client flow decision-making^c. These decisions occur at the strategic planning level, the logistical level and the tactical level. These three levels of decision-making are characterized as:

1) Nursing management strategic decision-making^c:

- Strategic nursing staffing decision-making^c (guidelines on nurse utilization rates, staff mix and staffing levels).
- Strategic patient/client-flow decision-making^c (policies on nursing regarding the number and types of patients/clients admitted).

2) Nursing management logistical decision-making^c:

- Logistical nursing staffing decision-making^c (nursing staff scheduling for a fixed period).
- Logistical patient/client-flow decision-making^c (patient/client admission scheduling, etc.).

3) Nursing management tactical decision-making^c:

- Tactical nursing staffing decision-making^c (last minute adjustments).
- Tactical patient/client-flow decision-making^c (transfer of patient/client from one unit or another, cancellation of scheduled admissions).

As part of the staffing process there must always be a communicating control and system analysis component. This provides an appropriate feedback mechanism that can result in adjustments as necessary in either the nurse-staffing or patient/client flow decision-making process. Nursing staff supply is a complex process that is equally important for nurse staffing and patient/client flow decision-making. Many ratios and mix indicators related to nursing staff supply are pertinent with respect to nursing staffing⁶. To clarify the concept of “mix”, the following definitions were developed:

1) **“nursing staff skill mix”**

refers to actual staff skill categories and skill levels (e.g RN, RPN/LPN);

2) **“nursing staff status mix”**

refers to the full-time, part-time, casual and agency employment status of actual staff; and

3) **“contingency staffing”**

refers to staffing needed in addition to baseline staff in order to maintain an appropriate workload for staff while meeting patient/client needs.



Summary of Recommendations for Developing and Sustaining Effective Staffing and Workload Practices

The following recommendations were organized using the key concepts of the Healthy Work Environments Framework, and therefore identify:

- operational recommendations;
- organizational recommendations; and
- external (health) systems recommendations.

RECOMMENDATION	
Organizational Level	<p>1. Organizations plan, implement, and evaluate staffing and workload practices at the three levels of decision-making – strategic, logistical, and tactical – that result in staffing that facilitates the delivery of safe, competent, culturally sensitive and ethical care.</p> <p>Decisions about staffing to facilitate safe and quality care incorporate the following principles:</p>
	<p>1.1 Strategic nursing staffing processes support the delivery of safe, competent, culturally sensitive and ethical care by:</p> <ul style="list-style-type: none"> ■ Ensuring that the budget is aligned with the required staffing levels to meet patient/client needs and accommodate replacement, orientation and professional development. ■ Maximizing continuity of care⁶ and continuity of care givers. ■ Providing delivery methods to meet fluctuating patient/client and staff requirements. ■ Responding to staff work life considerations and work preferences. ■ Being fair and equitable. ■ Ensuring a full-time/part-time ratio of 70% / 30% to enable continuity of care and to ensure patient/client safety, a quality work environment and stability in the workplace. ■ Ensuring that nurse staffing, inclusive of staff mix, is planned on a unit/program basis and reflects individual and collective patient/client, nurse and system characteristics. ■ Ensuring that the category of nurse used reflects the best evidence available, recognizing the strong association between category of nurse and health outcomes for patients/clients. ■ Ensuring that nursing utilization⁶ rates are kept at a level necessary to achieve a balance between patient/client needs, the nursing effort⁶, the experience, educational preparation and scope of practice of nursing staff, and the organizational demands. ■ Ensuring that education and opportunities for reflection are provided that foster a climate of diversity and inclusively as it relates to the staffing objective.
	<p>1.2 Logistical nursing staffing processes are conducted by unit/operational nurse leader(s) who have the requisite knowledge, professional judgment, skills and authority, in collaboration⁶ with nursing staff, at the point of care by ensuring that:</p> <ul style="list-style-type: none"> ■ Nurse leaders can make decisions about the impact of changes to the patient/client care delivery systems on nursing staffing and workload. ■ Decision-making responsibilities encompass the required financial and human resources and appropriate utilization of nursing personnel. ■ A process is in place that results in a schedule that reflects an optimal trade-off between nurses' preferences and the required coverage to meet patient/client care needs, while recognizing contractual obligations and human resources policies

RECOMMENDATION	
	<p>1.3 Tactical nursing staffing processes result in balancing the required and actual nursing staff on each nursing unit⁶ or team at each shift or time-frame of care and are carried out by nurses at point of care who have the requisite knowledge and skills.</p> <p>Tactical staffing decision-making includes:</p> <ul style="list-style-type: none"> ■ adjusting staff supply (using contingency staff); ■ adjusting staff required (transferring patient/client or canceling scheduled admissions, scheduled programs or nurse visits); or ■ adjusting both staff supply and staffing required. <p>Tactical staff decision-making is facilitated by:</p> <ul style="list-style-type: none"> ■ mechanisms in place to adjust to changes in patient/client acuity and staff replacement needs such as an internal resource team and pre-scheduling of replacement staff; and ■ nurses in all roles empowered to make appropriate staffing decisions that result in safe, competent, ethical care.
	<p>2. The board, administrative leadership⁶ and human resources planning department work collaboratively to ensure that processes, infrastructure and staff are in place to provide adequate nurse staffing to meet patients'/clients' needs.</p>
	<p>2.1 The senior management team⁶ includes a senior nurse executive who is involved in all phases of the organizations' strategic planning, policy, evaluation and reporting processes.</p>
	<p>2.2 Nursing fiscal planning provides for effective base staffing, and replacement of staff, and has the flexibility to accommodate changes in patient/client acuity⁶ affecting nursing intensity.</p>
	<p>2.3 Nursing budgets include financial resources for professional⁶ development, education, orientation, mentoring and other support systems needed to augment the skills and competencies in the face of changing technologies and influx of new staff.</p>
	<p>3. Organizations engage nurses in all roles, in all phases of the strategic planning process, including development, implementation and evaluation.</p>
	<p>3.1 Strategic plans reflecting planned change are aimed at achieving and maintaining a healthy work environment through appropriate staffing and workload management practices throughout planned change processes.</p>
	<p>3.2 Organizations make every effort to mitigate the impact of major disasters and other unplanned change on staffing and workload by having disaster and crisis plans in place (i.e. plans for pandemic; influenza; natural disasters; significant staffing or governing/leadership change on all levels of governments, health care providers, and the system by aiming to maintain stable structures and processes, adequate supports (i.e. sufficient staff, information and involvement in decision-making), and open communication.</p>
	<p>4. Strategic planning and policy making that affects nursing workload and nurse staffing strategies are informed by measures that capture the impact of inputs, throughputs and outputs, as reflected in the Patient Care Delivery Systems Model (PCDSM).</p>

RECOMMENDATION	
	<p>4.1 Processes are in place for the ongoing evaluation, monitoring and refinement of measures that reflect the variables/elements of the PCDSM to ensure they are valid and reliable (i.e. used properly and measure what was intended), and reflect professional practice standards and evidence-based practices.</p> <p>4.2 Decisions affecting nursing human resources (i.e. reorganization, service cuts, delivery models, etc.) consider evidence about healthy work environments to ensure safe, competent, ethical care</p>
	<p>5. Financial and human resources are dedicated to support an infrastructure of integrated electronic systems to effectively design, manage and evaluate the scheduling, staffing, workload measurement⁶ and patient/client flow processes to meet the needs of patients/clients, nurses, other providers and the health care system.</p> <p>5.1 Nursing management is involved in and supports the development and integration of problem-solving tools, feedback processes, and monitoring systems (including indicators and data elements) linked to a comprehensive information management and decision support system</p>
Health System Level <i>Accreditation Bodies</i>	<p>6. Accreditation and approval bodies incorporate indicators that are comprehensive and reflect best practices in nursing staffing and workload management in approval and accreditation programs. The overall process of accreditation and approval is guided by an evidence-based model.</p>
	<p>6.1 Health service organizations are accredited based on criteria that reflect recommendations in this HWE BPG, including the range of variables that affect the delivery of high quality, safe and ethical care to patients/clients and provision of a safe work environment for nurses.</p>
	<p>6.2 Nursing educational programs are approved and accredited based on criteria that reflect recommendations in this HWE BPG, including the range of variables that affect the clinical and classroom work environments for students and faculty</p>
Health System Level <i>Governments</i>	<p>7. Federal, provincial, regional and local governments commit both financial and human resources to develop, implement and evaluate care delivery models, policies and programs that support appropriate staffing and workloads⁶.</p>
	<p>7.1 Governments commit to providing financial resources that facilitate the development of sustainable effective nursing staffing⁶ practices within all health care organizations that foster healthy work environments⁶ for nurses⁶.</p>
	<p>7.2 The Principal Nurse Advisor⁶ (PNA) is an integral part of the health system⁶ decision-making authority at the federal/provincial/territorial ministry levels and has the requisite knowledge, authority and accountability related to nursing human resources.</p>
	<p>7.3 The PNA has a sustainable budget to develop, support and evaluate a nursing human resources strategy that is integrated within a broad health human resources strategy.</p>
	<p>7.4 The PNA is involved in health system planning and decision making related to nursing strategic planning and policy making, nursing staffing and workload matters.</p>

RECOMMENDATION	
Health System Level <i>Research</i>	8. Nurses in all roles, nursing and health services researchers, policy makers, decision makers, professional associations, unions, and the public work together to build the necessary evidence to inform staffing and workload best practices in the delivery of safe, competent, and equitable care to patients/clients ⁶ . Research that focuses on building evidence in next generation workload measurement systems ⁶ in nurse staffing ⁶ can be accomplished by:
	8.1 Allocating research funding to investigate the impact of length of shift, hours of work and environment on patient/client ⁶ safety, nurse safety, quality of work life and continuity of patient/client care.
	8.2 Working in partnerships to better understand the impact of changing health delivery models and innovative nurse staffing policies and workload management ⁶ systems on patient/client, nurse and other health care provider, and system outcomes.
	8.3 Focusing on better understanding the evolving and new roles for nurses and other health care providers (i.e. nurse endoscopists, physician assistants, nurse anesthetists) as well as the roles of RNs, RPNs/LPNs and RPsychNs and their impact on health, provider, and system outcomes

Sources and Types of Evidence on Developing and Sustaining Effective Staffing and Workload Practices

Evidence-based practice is now an expectation in medical, nursing and other health professions. It is an essential component of the delivery of quality care.

Healthy Work Environments (HWE) Best Practice Guidelines (BPG) relate more to evidence-based management than to clinical practice and, as such, need to be operationalized within the culture and context of organizations. RNAO believes that HWE guidelines are essential to support employers of nurses who create, maintain and sustain healthy work environments to enable excellence in clinical practice.

Evidence-based management is an essential concept,⁶⁰⁻⁶² given the relationship between work environment and practice and patient/client outcomes.³¹ The 2003 Institute of Medicine (IOM) Report notes that managers, similar to their clinical colleagues should “search for, and apply empirical evidence from management research into their practice.” However, there is little empirical evidence available about best health care management practices,⁶¹ largely because:

- organizational research has not consistently focused on practical management questions;⁶⁰
- health care management research has been limited by the level of funding it has received compared with management research in other industries; and
- research funded by large health systems has been considered proprietary and the results are not widely shared.⁶¹

As a result, evidence-based management practices have not been as widely supported in the health care setting as have evidence-based clinical practices.

The methodology for creating best practice guidelines involves identifying the strength of the supporting evidence.⁶³ The prevailing systems of grading evidence identify systematic reviews⁶ of randomized controlled trials (RCT) as the “gold standard” for evidence.¹⁹ However, not all questions of interest are amenable to the methods of an RCT, particularly where subjects cannot be randomized or where variables of interest are pre-existing or difficult to isolate. This is particularly true of behavioural and organizational research, in which controlled studies are difficult to design due to continuously changing organizational structures and processes. Moreover, health care professionals are concerned with more than cause-and-effect relationships and recognize a wide range of approaches to generate knowledge for practice. For all of these reasons, the panel for this guideline has adapted the traditional levels of evidence used by the Cochrane Collaboration⁶⁴ and the Scottish Intercollegiate Guidelines Network (SIGN) to identify the types of evidence on which this guideline is based.⁶⁵

Evidence Rating System

Type of Evidence	Description
A	Evidence obtained from controlled studies, meta-analyses ⁶
A1	Systematic Review ⁶
B	Evidence obtained from descriptive co-relational studies ⁶
C	Evidence obtained from qualitative research ⁶
D	Evidence obtained from expert opinion ⁶
D1	Integrative Reviews ⁶
D2	Critical Reviews ⁶

Organizations using the staffing and workload BPG will note that many of the recommendations are based on Type B and D evidence. This is largely because many co-relational and qualitative studies have examined various components of a staffing and workload system (e.g. staff mix, scheduling practices, workload and staffing). Very few controlled trials have studied the relationships between the inputs, throughputs and outputs associated with staffing and workload. To date, the most comprehensive staffing/workload system research is the Evidence-based Standards for Measuring Nurse Staffing and Performance study.⁴⁰

The majority of research over the past five years related to nurse staff reductions and changes in staff mix has highlighted both the physical and psychological impact on nurses and the adverse outcomes for patients/clients. While these co-relational and qualitative studies have charted new territory and contribute to the overall body of knowledge, they are limited in their generalizability due to methodological variations (e.g. small sample size, sector specificity, variations in reliability of data sources and degree of scientific rigor).^{46,66,67}

The evidence used to support the staffing and workload recommendations is drawn from the critical seminal literature in this area. The primary source of evidence was the *Comprehensive Systematic Review on the Impact of Workload and Staffing to Create a Healthy Working Environment*, a joint initiative of the RNO and The Joanna Briggs Institute, Adelaide, Australia, the final report of which was completed in May 2006.⁴⁶ In this review, 2162 papers were identified as relevant to the specific question framed in the literature review protocol. However, based on the inclusion criteria defined within the protocol, only 275 papers were retrieved for further critical analysis. Incongruence with review objectives, intervention, outcomes, or poor methodological quality resulted in the exclusion of 225 of the 275 papers. The remaining 50 papers were deemed to be of sufficient quality and were included in the systematic review.

In addition, other literature that reflected the Patient Care Delivery Systems Model developed was identified through targeted searches and included in this guideline, following review by at least two panel members to ensure that it met the research quality criteria. While no other systematic reviews related to this topic have been conducted, two other publications have included a comprehensive review of literature in related areas.^{66,68} No systematic reviews or randomized controlled trials were found that addressed the effectiveness of nursing staffing and workload concepts and their impact on the achievement and sustainability of a healthy work environment. The relationship between staffing and nurse, patient/client or organizational outcomes, investigated using largely co-relational study methodology, is the most prevalent published topic in this area. It is important to note that no published guidelines related to staffing and workload were identified through the comprehensive systematic search or other literature reviews.

This BPG presents the evidence with an overview of the trends and key findings within each recommendation area. Where available, Type “A” evidence from the Comprehensive Systematic Review completed by the Joanna Briggs Institute, Adelaide, Australia⁴⁶ is presented to amplify the co-relational and qualitative findings.

Discussion of Evidence

Creating a healthy working environment⁶ for nurses begins with effective and proactive staffing and workload processes that capitalize on individual and collective nurses’ knowledge, experience and skills sets. Three key elements of workload planning, workload management and workload measurement are critical to successful staffing and workloads, and must be operationalized within a systems context.

- **Workload planning** occurs annually and involves such key activities as identifying the patient/client population needs, selecting the most appropriate care delivery model, determining the base staffing pattern, calculating the necessary full, part-time and casual Full Time Equivalents (FTEs), determining the most appropriate skill mix requirements, and forecasting budget requirements.
- **Workload management** is an ongoing activity of ensuring that the right number and skill mix of staff (i.e. category of caregiver, education, experience with given patient/client population, competencies, etc.) are available to meet the care needs of the patient/client.
- **Workload measurement** is a process of quantifying the amount of direct and indirect care time requirements for an aggregate of patients/clients on a given shift in a specific unit, program or facility.

In the past two decades, hospitals and health systems have been focused on cost control and operations and restructuring to reduce cost and achieve maximum efficiencies. Because nurse staffing costs are a component of health care organizations’ budgets, many administrators reduced numbers of regulated nurses as a cost control measure⁶⁹⁻⁷¹ and replaced them with less skilled, unlicensed care providers.^{72,73} Other presumed cost containment measures included massive restructuring of nursing services, loss of nursing administrative autonomy, wide-spread changes in staffing mix, decreased support services and rapid movement of patients/clients across care settings. These outcomes for organizations and nurses have been correlated with negative outcomes for patients/clients. Such negative outcomes include: increased morbidity and adverse events (i.e. higher rates of urinary tract infections (UTIs), pneumonia, shock, cardiac arrest, upper gastrointestinal (GI) bleeding and failure to rescue).^{18,22,40,74}

While the health care system is still struggling to deal with the negative results of two decades of efficiency-related restructuring, further challenges have been presented by the increasingly apparent global shortage of nurses. The Final Report of the Canadian Nursing Advisory Committee⁴⁴ identified three root causes of the current nursing shortage:

1. actual shortage of nursing supply (e.g. a reduced number of places in nursing education programs and an aging nursing workforce);
2. human resources management issues that render it impossible to maximize the productivity of the nurses who are available to work (e.g. high absenteeism, high overtime, high rate of part-time work, high number of non-nursing tasks, and limited scope of practice); and
3. insufficient funds to hire the requisite nurses needed to deliver the care being demanded. It is imperative that these root causes be addressed since it is clear that a strong nursing work force, able to provide the nursing care required, has a direct and significant impact on patient/client health outcomes.⁴⁴

Staffing and workload are complex issues that cannot be remedied with simple ratios or predictive needs equations. The Institute of Medicine (IOM) Report⁷⁵ recognized that imposing staffing ratios is an inadequate method of achieving optimal staffing and staff mix. It is suggested that minimum ratios may not provide quality care or ensure patient/client safety.

This guideline outlines evidence-based recommendations and related principles and strategies for effective staffing and workload principles. (See Appendix B).

Organizational Level Recommendations

- 1.0 Organizations plan, implement, and evaluate staffing and workload practices at the three levels of decision-making – strategic, logistical, and tactical – that result in staffing that facilitates the delivery of safe, competent, culturally sensitive and ethical care.

Decisions about staffing to facilitate safe and quality care incorporate the following principles:

- 1.1 Strategic nursing staffing processes support the delivery of safe, competent, culturally sensitive and ethical care by:

- Ensuring that the budget is aligned with the required staffing levels to meet patient/client needs and accommodate replacement, orientation and professional development.
- Maximizing continuity of care^c and continuity of care givers.
- Providing delivery methods to meet fluctuating patient/client and staff requirements.
- Responding to staff work life considerations and work preferences.
- Being fair and equitable.
- Ensuring a full-time/part-time ratio of 70% / 30% to enable continuity of care and to ensure patient/client safety, a quality work environment and stability in the workplace.
- Ensuring that nurse staffing, inclusive of staff mix is planned on a unit/program basis and reflects individual and collective patient/client, nurse and system characteristics.
- Ensuring that the category of nurse used reflects the best evidence available, recognizing the strong association between category of nurse and health outcomes for patients/clients.
- Ensuring that nursing utilization^c rates are kept at a level necessary to achieve a balance between patient/client needs, the nursing effort^c, the experience, educational preparation and scope of practice of nursing staff, and the organizational demands.
- Ensuring that education and opportunities for reflection are provided that foster a climate of diversity and inclusively as it relates to the staffing objective.

1.2 Logistical nursing staffing processes are conducted by unit/operational nurse leader(s) who have the requisite knowledge, professional judgment, skills and authority, in collaboration⁶ with nursing staff, at the point of care by ensuring that:

- Nurse leaders can make decisions about the impact of changes to the patient/client care delivery systems on nursing staffing and workload.
- Decision-making responsibilities encompass the required financial and human resources and appropriate utilization of nursing personnel.
- A process is in place that results in a schedule that reflects an optimal trade-off between nurses' preferences and the coverage required to meet patient/client care needs, while recognizing contractual obligations and human resources policies.

1.3 Tactical nursing staffing processes result in balancing the required and actual nursing staff on each nursing unit⁶ or team at each shift or time-frame of care and are carried out by nurses at point of care who have the requisite knowledge and skills.

Tactical staffing decision-making includes:

- adjusting staff supply (using contingency staff);
- adjusting staff required (transferring patient/client or canceling scheduled admissions, scheduled programs or nurse visits); or
- adjusting both staff supply and staffing required.

Tactical staff decision-making is facilitated by:

- mechanisms in place to adjust to changes in patient/client acuity and staff replacement needs such as an internal resource team and pre-scheduling of replacement staff; and
- nurses in all roles empowered to make appropriate staffing decisions that result in safe, competent, ethical care.

Discussion of the Evidence^a

Due to the lack of reliable, valid and sensitive nursing staffing instruments, nurse staffing has been evaluated with methods that focus on numerical assessments of the staffing complement as well as methods that capture staffing mix in the organization or unit. Measures of nurse staffing include:

- a) proportion of RNs to other nursing or less-qualified staff;
- b) nursing hours per patient/client day (HPPD);
- c) ratio of RNs to patients/clients;
- d) number of full-time equivalents;
- e) percentage of full-time, part-time and casual staff; and
- f) mix of demographic characteristics such as education and experience. However, these approaches do not address the complexity and variability of cases and nurses' capacity to add to their workload due to competing demands.⁷⁶

In 2004, Lang, Hodge, et al.,⁷⁷ conducted a review of the literature (published between 1980 and 2003) to determine if support existed for specific, minimum nurse-patient/client ratios for acute care hospitals and whether nurse staffing was associated with patient/client, nurse or hospital outcomes. Key findings included:

- The literature offers no support for specific, minimum nurse-patient/client ratios for acute care hospitals, especially in the absence of adjustment for skill and patient/client mix; however, total nursing hours and skill mix do appear to affect some important outcomes.
- The evidence supports a probable inverse relationship between nurse staffing and failure to rescue among surgical patients/clients.
- The evidence, although mixed, supports a probable inverse relationship between nurse staffing and in-patient/client mortality.
- The evidence neither confirms nor refutes an inverse relationship between nurse staffing and pneumonia rates among medical-surgical patients/clients.
- The evidence for a direct relationship between richer nurse staffing and total hours of patient/client care is weak and dated.
- The evidence for a relationship between nurse staffing and measures of patient/client satisfaction is weak at best. The authors suggest that nursing competence and organizational factors, rather than nursing numbers, are the most likely predictors of patient/client satisfaction.

a Type of Evidence

There is B and D type evidence for this recommendation

The Canadian Nurses Association (CNA) Nursing Staff Mix Literature review,⁶⁶ noted that rigorous studies have consistently demonstrated that staffing/skill mix in a given setting cannot de facto be applied to other settings. Buchan and Dal Poz⁷⁸ suggested that skill mix should be examined through the identification of care needs of a specific patient/client population and then be used to determine the required skills of staff. The need to collect data and adjust for patient/client severity^C/acuity should occur at the unit level, where the impact of nurse staffing is more direct.^{57,74,76,79,80} In a review of eight work sampling studies, Prescott, Phillips, Ryan and Thompson⁸¹ reported that, on average, nurses spent only 20% to 43% of their time completing direct care activities with patients/clients and families. The remaining time was spent on combined indirect care and unit management activities, and personal time. Nurses continue to spend time portering, cleaning, restocking supplies, performing clerical duties and delivering meal trays.⁸¹ In a more recent study that examined long-term care environments, McGillis Hall and O'Brien-Pallas^{79,80} noted that RNs performed the lowest percentage of direct care (26% of their time), chiefly due to their accountability for planning and coordinating the care provided by others.

The Institute of Medicine (IOM) Committee⁷⁵ reported that high turnover of nursing staff and the utilization of temporary staff from external agencies threaten patient/client safety by decreasing continuity of care and introducing personnel with less knowledge of nursing unit polices and practices. The Committee suggested that priority strategies for achieving adequate staffing are reducing staff turnover and limiting use of registry personnel.

Many studies have noted the correlation between a higher proportion of full-time staff and better nurse, patient/client and system outcomes,^{48,82} although the actual set point for the ratio of full- to part-time staff has not been established. However, the conventional wisdom of professional organizations,^{2,44,83-85} nurse leaders^{13,44,86-88} and governmental reports⁸⁹⁻⁹¹ supports a 70% to 30% ratio. Until additional research studies have consistently refuted this set point, for best outcomes the committee supports their expert opinion.

The IOM Report, *Keeping Patients Safe: Transforming the Work Environment of Nurses*,⁷⁴ suggested it is feasible to establish a minimum staffing number for each category of nursing staff. However, the staff mix required would be determined by research and/or a consensus of expert opinion based on the level of risk to the patient/client for untoward events. The skill mix need should be based on the determination of desired outcomes of care and the relationship between the skill set of the worker and outcomes of care.⁸² Lang, Hodge, et al.,⁷⁷ conducted a review of the literature to determine whether evidence exists to support minimum nurse-patient/client ratios for acute care hospitals and whether nurse staffing is associated with patient/client, nurse or hospital outcomes. The evidence available suggests that richer nurse staffing is associated with lower failure-to-rescue rates, lower inpatient mortality rates and shorter hospital stays.

There is a need to review nursing workload by applying nursing costing formulas that recognize the complexities of the care environment and the clinical uncertainties in patient/client care. This is important for ensuring a strong and vibrant health care system, which is essential to achieving desired patient/client outcomes.⁹² McGillis Hall, et al.,⁹³ found that staff mix models that included a lower proportion of regulated nursing staff utilized more nursing hours, while a staff mix with higher proportions of RNs and RPNs/LPNs was associated with better health and quality outcomes for patient/client at the time of discharge. In addition, higher proportions of RNs and RPNs/LPNs also demonstrated lower medication error and wound infection rates.

The study also found a high degree of diversity of nursing care in the acute care setting, and it was suggested that each unit may require a unique implementation or formula for staff mix^{52,74,79,93} adjusted for case mix and modeled their data using various nurse-to-patient/client ratios, and concluded that a ratio of four, rather than eight, patients/clients per nurse (two of the ratios proposed for California) would prevent five deaths per 1000 patients/clients in general and 18.2 deaths per 1000 patients/clients with complications.

In 2002, Holcomb and colleagues conducted a concept analysis of productivity, and found that “when productivity was defined, it was either defined as ratio of outputs to inputs⁹³⁻⁹⁷ or as the relationship between inputs and outputs.⁹⁹⁻¹⁰³ Blegen, Goode & Reede,⁷⁹ conducted a single site study involving 42 patient/client care units in a U.S. hospital and examined the hours of care provided by all nursing personnel and the proportion of those hours of care provided by RNs in relation to patient/client outcomes. The researchers found that a higher proportion of RN staff relative to all clinical staff was associated with lower rates of decubiti and medication administration errors as well as fewer patient/family complaints. In a similar study by Blegen and Vaughn²⁰ involving 39 units from 11 U.S. hospitals results showed that a higher proportion of RN staff was associated with fewer medication administration errors and lower rates of patient falls.

In 1999 the Canadian Institute for Health Information (CIHI) proposed that the measure for nursing productivity be the relationship between nursing workload units and direct care worked hours (Unit Productivity = workload hours/worked hours x100).¹⁰⁴ Given the influences that are not considered in the CIHI productivity measure, the formulas might well be considered a measure of “labour capacity” or “utilization” rather than productivity.^{76,104} O’Brien-Pallas and colleagues⁷⁶ noted that the maximum labour capacity (i.e. workload divided by worked hours) of any employee is 93%. Seven percent is allocated to paid breaks, during which time no workload is contractually expected.

O’Brien-Pallas et al.⁷⁶ demonstrated that nursing productivity^G is not linear, and although the goal is to maximize nurse activity, at productivity levels of about 80%, negative outcomes emerged because nurse capacity is inadequate to meet patient/client care demands. Significant benefits, both fiscal and human, could be achieved by moderating productivity levels within a range of 85% + 5%. In 2001, O’Brien-Pallas and Thomson et al.¹⁰⁴ reported that research indicates heavy workloads contribute to job strain and suggested that short-term increases in productivity lead to long-term increases in health costs for staff. An earlier study noted a direct positive correlation between the hours of overtime worked and sick time claimed.¹⁰⁴

Nurses health status is also influenced by work overload and overtime.⁷⁶ In a study of 168 U.S. hospitals involving 10,184 staff nurses and 232,342 adult surgical patients discharged over a 20-month period, an increase of one patient/client per nurse was associated with a 23% increase in burnout and a 15% decrease in job satisfaction.⁷⁴

Magnet hospitals have demonstrated fewer patient/client deaths per patient/client discharged than non-magnet hospitals, a fact-finding attributed to a staff mix with higher numbers of RNs.¹⁰⁵ Tourangeau et al.²² also noted a positive correlation between nurse staffing mix rich in RNs and lower 30-day mortality rates.¹⁰⁶ The IOM Report entitled *Patient Safety: Transforming the Work Environment of Nurses*⁷⁴, relates higher levels of RN hours per patient/client day and lower RN turnover rates with improved patient/client survival rates, improved functional status, earlier discharge, fewer pressure ulcers, decreased urinary tract infections (UTIs) and reduced use of antibiotics.

Because the nursing service is one of the largest cost components in an organization's budget, it is essential for managers to develop an efficient operational plan that generates the best use of available resources. The decision is complicated by many factors, including organizational policies, labour laws, mix of full- and part-time staff, and categories of staff (e.g. regulated, unregulated).¹⁰⁷ These factors pose significant challenges to nurses and nursing administrators regarding effective and equitable scheduling practices. Giglio¹⁰⁸ reports that appropriate scheduling is the key to effectiveness and efficiency. Effective scheduling of nursing personnel is important in controlling health care costs and directly affects the quality of patient/client care.¹⁰⁹ (Refer to Appendix B for an overview of different approaches to scheduling and specific strategies on developing an effective schedule.)

Silvestro and Silvestro¹¹⁰ asserted that the delivery of patient/client care, resource utilization and employee satisfaction are critically dependent on the scheduling of nursing time on hospital wards. The researchers identified three types of rostering approaches, namely, self-rostering practices (i.e. self-scheduling), departmental rostering and team rostering (i.e. a combination of self and departmental approaches). The authors contended that the choice of a rostering approach should be determined on the basis of four contingent variables: ward/program size; demand variability in patient/client care requirements; demand predictability; and complexity of skill mix required. The authors recommended that departmental (i.e. nurse-managed scheduling) rostering be applied in large wards/programs with complex rostering problems, while team rostering is more appropriate for medium-sized wards/programs and self-rostering is more appropriate for small wards.

Brooks and Swailes¹¹¹ explored the theoretical and practical bases of commitment and control within the context of temporal aspects of flexible working in nursing. Their research clearly showed that when nurses have a strong perception of career development potential, there are minimal negative impacts related to shift work.

Robinson and Bostrum¹¹² concluded that the amount of time people spend at work is an important measure of quality of life. High rates of overtime utilization can have profoundly negative effects on nurses, patients/clients and the organization. Positive mean correlations between hours of work and overall health symptoms were reported by Sparks, Cooper, Fried and Shirom.¹¹³ Prolonged exposure to hazards, stress and fatigue were concerns related to overtime reported by Worthington.¹¹⁴ In a study of more than 8000 Ontario nurses, the risk of an RN lost-time claim increased by 70% for each quartile increase in the percentage of RNs who reported more than one hour of overtime per week.¹¹⁵

Warner¹¹⁶ identified the importance of evaluating scheduling methodology in hospitals and proposed that evaluation criteria should include: coverage; perceived value of the schedule to nurses; and flexibility of the scheduling systems for the organization. With respect to coverage, Warner noted that evaluation should address the extent to which a schedule meets minimum coverage requirements and provides balanced coverage quality.

In 1994, Titler et al.¹¹⁷ concluded that a pool of internal "float nurses," having received the training necessary to provide care to patients/clients with diverse clinical needs in different care units, could meet the need for additional staff. Morrisey¹¹⁸ suggested that the use of cross-trained float nurses is safer than pulling

nurses from the units in which they work, as cross-trained float pool nurses have the knowledge and expertise to function in a variety of practice settings. It is noted that the use of a float pool reduces the number of extra staff in a facility, in contrast with staffing each unit above projections.

Arndt and Crane¹¹⁹ found that the implications of even a few more minutes of care per patient/client per day can be much greater than first appreciated. Six more minutes of care per patient/client day on a full nursing unit with 30 beds requires an additional half-time position (e.g. 6 minutes x 30 patients/clients x 365 days = 65,700 minutes, or 1,095 hours per year, or about one-half the standard 2,080 hour work year). With respect to patient/client outcomes, it has been reported that an increase of 0.5 RN hours per patient/client day would be associated with a 4.5% decrease in urinary tract infections, a 4.2% decrease in pneumonia, a 2.6% decrease in thrombosis and a 1.8% decrease in pulmonary compromise after surgery.²⁵ Decisions regarding minor staffing changes have major effects on patient/client outcomes.

George et al.¹²⁰ described how the implementation of a shared leadership model leads to increased staff leadership behaviours, autonomy and improved patient/client outcomes. In one study, staff nurses in a large teaching hospital noted a link between managers' use of empowering behaviours and nurses' sense of workplace empowerment⁶ and reduced job tension.¹²¹

Curtin¹²² recommended that staffing decisions be modified depending upon the nurse's experience, the organization's characteristics and the quality of collaboration between all levels of staff within the facility. Rohrer et al.⁵³ analyzed patient/client physical function in 10 nursing homes and found that organizational design variables were crucial. The authors found that better resident outcomes could be achieved in faster-paced environments when employees were less closely supervised and the basis for job assignment was clear and consistent. The IOM Committee Report *Maximizing Workforce Capability: Keeping Patients Safe*⁷⁵ profiles an alternative to reaching "equilibrium" between demand and supply. Advocates of work sampling tools to reengineer nurses' work assert that achieving optimum nursing work distribution requires empowered nursing staff who are allowed to use their creativity and search for more efficient ways to deliver quality patient/client care.¹²³

Changes in patient/client acuity that affect nursing intensity often require that staff nurses make staffing and workload decisions. Nurses must be empowered to make these decisions by ensuring they have the appropriate related competencies. Rozich and Resar¹²⁴ described a situation in hospitals whereby regular staff were given the authority to limit new admissions based on their professional judgment. Bayiz¹²⁵ found that allowing staff to regulate the workflow reduced the need for a float pool.

The importance of responding to the professional judgments of nurses at the tactical level with respect to staffing adequacy was reinforced in Tourangeau's¹⁰⁶ study of nursing staffing and 30-day mortality. Tourangeau et al. found that a 10% increase in nurse-reported adequacy of staffing and resources was associated with 17 fewer deaths for every 1000 discharged patients. Nurses' views of staffing needs provide evidence of actual need.

2.0	The board, administrative leadership ⁶ and human resources planning department work collaboratively to ensure that processes, infrastructure and staff are in place to provide adequate nurse staffing to meet patients'/clients' needs.
2.1	The senior management team ⁶ includes a senior nurse executive who is involved in all phases of the organizations' strategic planning, policy, evaluation and reporting processes.
2.2	Nursing fiscal planning provides for effective base staffing, and replacement of staff, and has the flexibility to accommodate changes in patient/client acuity ⁶ affecting nursing intensity.
2.3	Nursing budgets include financial resources for professional ⁶ development, education, orientation, mentoring and other support systems needed to augment the skills and competencies in the face of changing technologies and influx of new staff.

Discussion of the Evidence^b

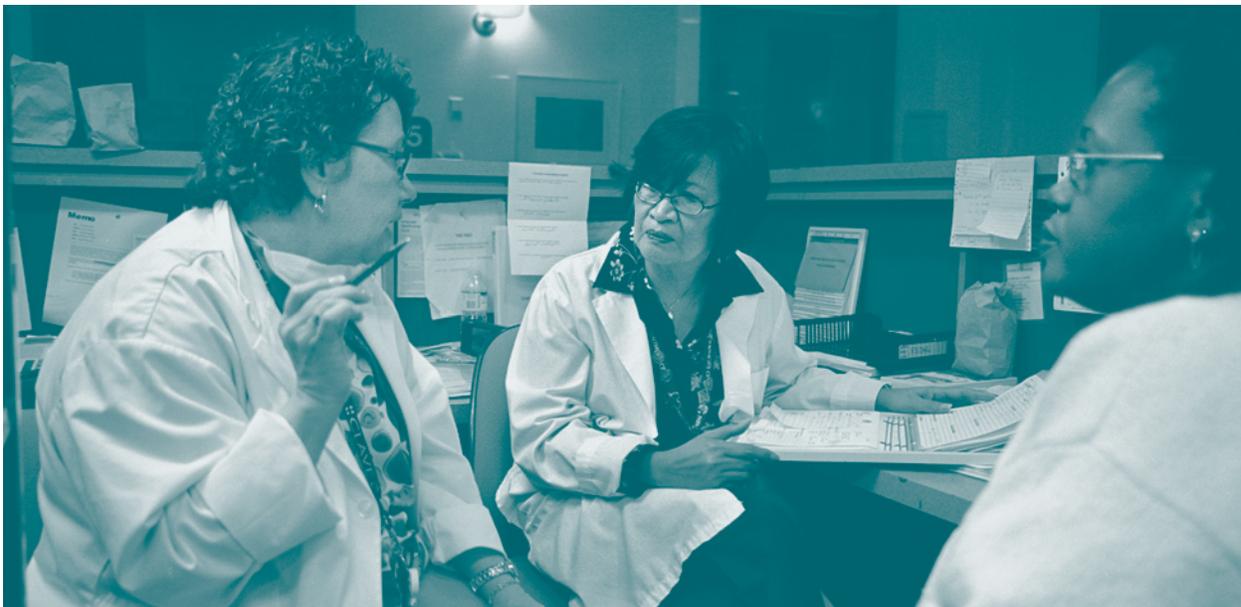
The Scope of Nursing Leadership^c is in continuous evolution as new organizational structures emerge in response to a changing and evolving health care environment. In the past five years, nursing structures have undergone considerable change and new nursing leadership roles have emerged (e.g. Chief of Practice, Chief Nursing Officer, Practice Leader, Program Manager). Role definitions are highly variable and many have no legitimate line authority or fiscal responsibility. However, regardless of role scope, leaders continue to face the daily challenges of creating and sustaining professional practice environments by ensuring staffing and workload equilibrium. Nursing leadership creates an environment of professional practice.¹²⁶ To accomplish this, the nursing profession requires leaders who can transform practice cultures so the “essence, uniqueness, and outcomes of professional practice can be realized”.¹²⁷

b Type of Evidence

There is B and D type evidence for this recommendation

In today's environment, nurse leaders require knowledge not only of nursing practice, but also of regulatory issues, risk and liability, strategic planning, business skills and political acumen.¹²⁸ This concept is reinforced in The Academy of Canadian Executive Nurses 2004 position statement on Nursing Workload,¹²⁹ which suggests that Nursing leaders and health care executives must embrace their accountability to design workloads in accordance with patient/client care needs, while enabling nurses to work to their full scope of practice.

Baumann et al.⁸ conducted a peer-reviewed research review and conducted focus groups with nurses across Canada, to explore and identify effective solutions to improve the quality of the nursing work environment and ultimately patient/client outcomes. Results of this review led the authors to conclude that nurses perceive they have limited opportunities for input into decision-making and often lack the requisite power to influence change. Baumann et al. suggested that the reinstatement of formal nursing leadership positions, with shared governance models and nursing practice committees, would improve work environments. George, Farrell, and Brukwitzki¹²⁰ posit that the ability to co-create a vision is a key skill required by nurse leaders in restructured environments. George et al. further argue that this requires leaders with the competency to build trust within and among team members across the organization. Upenieks¹³⁰ reports that a positive magnet hospital⁶ culture is created by nurse leaders who support nursing excellence and professionalism. Upenieks' study also demonstrated that increased job satisfaction was related to implementation of nursing practice models and that successful implementation of those models was highly dependent on the manager's leadership skills in the change process.



3.0 Organizations engage nurses in all roles, in all phases of the strategic planning process, including development, implementation and evaluation.

3.1 Strategic plans reflecting planned change are aimed at achieving and maintaining a healthy work environment through appropriate staffing and workload management practices throughout planned change processes.

3.2 Organizations make every effort to mitigate the impact of major disasters and other unplanned change on staffing and workload by having disaster and crisis plans in place (i.e. plans for pandemic; influenza; natural disasters; significant staffing or governance/leadership changes. These plans address, where relevant, the impact of disasters on all levels of governments, health care providers, and the system by aiming to maintain stable structures and processes, adequate supports (i.e. sufficient staff, information and involvement in decision-making), and open communication.

Discussion of the Evidence^c

Clinical management tools must incorporate measures of nurse staffing. Current measures available include: proportion of RNs to overall nursing complement of staff; nursing hours per patient/client day (HPPD); ratio of RNs to patients/clients; number of full-time equivalents (FTEs); percentages of full time, part-time and casual staff; and nurse demographics (e.g. education and experience).¹³¹ As McGillis-Hall noted, when FTEs are used as a measure of nursing staffing it is also important to capture the several components of what makes up an FTE, such as types of workers and percentage of full-time hours that comprise full-time, part-time and/or casual staff. This more comprehensive type of measurement addresses the degree of casualization of the nursing workforce.¹³¹

As health care organizations restructure, there is an increased need for leaders who can work effectively across disciplines.¹³² Doran states: “The quality of health care depends on how well members of the team communicate, coordinate care and negotiate their interdependencies in practice to achieve a cohesive treatment plan for patients/clients”.¹³³ Based on accumulated evidence from several studies, Doran¹³³ reported that “the quality of team interactions, communication and care coordination are important determinants of each team member’s ability to influence improvements in the quality of care”^{134,135} and to achieve positive patient/client outcomes.^{54,136,137} The sharing of information, coordination of work and joint decision-making concerning patient/client care are three constructs of collaboration reported in the literature.^{54,138,139}

The Final report of Justice Campbell¹⁴⁰ regarding the SARS epidemic in Ontario demonstrated how ineffective communication and lack of attention to input from those at the point of care (including critical assessment data and information about impact of decisions being made) had massive negative effects on patients/clients, nurses and the organization.

c Type of Evidence

There is B and D type evidence for this recommendation

4.0	Strategic planning and policy making that affects nursing workload and nurse staffing strategies are informed by measures that capture the impact of inputs, throughputs and outputs, as reflected in the Patient Care Delivery Systems Model (PCDSM).
4.1	Processes are in place for the ongoing evaluation, monitoring and refinement of measures that reflect the variables/elements of the PCDSM to ensure they are valid and reliable (i.e. used properly and measure what was intended), and reflect professional practice standards and evidence-based practices.
4.2	Decisions affecting nursing human resources (i.e. reorganization, service cuts, delivery models, etc.) consider evidence about healthy work environments to ensure safe, competent, ethical care.

Discussion of the Evidence^d

The CNA literature review on Nursing Staff Mix reports that “the trend to casual staffing rather than full-time positions has led to nurses under the age of 30 being increasingly employed in part-time and casual positions. This trend results in fewer opportunities for these nurses to be socialized into the profession, gain the valuable experience of refining skills in a supportive environment or learn to be effective members of the health care team”^{66,82}

The American Nurses Association (1999) developed nine principles to be considered in decision-making related to nurse staffing. The principles were categorized into three sets of factors: a) patient/client care unit related; b) staff related; and c) organization related.

Patient/client care unit variables include: aggregate of patient/client care needs; patient/client complexity level; patient/client age; functional status; communication abilities; availability of social supports^c; geography of working environment; and technology.⁷⁶

Staff-related variables include: experience with the specific patient/client population; level of nurses’ experience (e.g. novice to expert); education and preparation (e.g. certification); language capabilities; tenure in the unit/program; level of control in the practice environment; degree of involvement in quality initiatives; and immersion in activities.

Organizational variables include: effective and efficient support services; access to timely, relevant information that is accurate and linked to patient/client outcomes; orientation programs and ongoing competency assessment mechanisms; technological preparation; adequate time for collaboration; care coordination and supervision of unregulated workers; mechanisms for reporting unsafe conditions; and a logical method for determining nurse staffing levels and skill mix.

d Type of Evidence

There is B and D type evidence for this recommendation

Currently, administrative nurses track workload and productivity using data associated with Patient/Client Classifications Systems (PCSs) or Workload Measurement Systems (WMSs) (i.e. Medicus, GRASP®, National Institute of Statistical Sciences [NISS], Practice and Research in Nursing [PRN]). The utility of these workload indicators is dependent on the quality of the data collected and the soundness of the analytic processes used in understanding their relevance to the work environment.³² According to the CNA literature review on Nursing Staff Mix, “nurses feel that they spend too much time rationalizing their worth, leaving less time for patient/client care.”^{66,142-146} Researchers who have studied nurse staffing vis à vis the use of PCSs, state there is a wide mistrust of virtually all such tools and that they are inadequate for determining unit staffing on a daily or shift basis.^{66,147}

PCSs lock staffing predictions into an average estimate, and thus lack the ability to ascertain variations in patient/client acuity. As a result, they fail to acknowledge the need for flexibility in staffing decisions.^{144,145} O’Brien-Pallas et al.¹⁴⁸ conducted a study that compared four different PCSs for the same patient/client population and found large statistically and clinically significant differences in hours of care needed by the patient/client in each of the four tools. Clearly, there is no “one size fits all” set of standard times that can be used across hospitals.¹²⁵

McGillis Hall⁶⁸ and other authors have summarized the findings of numerous well-powered, multi-centre research studies on nurse staffing and noted substantive evidence of the link between nurse staffing and patient/client, nurse, and organizational outcomes.

McGillis Hall et al.¹⁴⁹ explored the relationship between nursing staff mix models and nursing costs in a large study involving 19 teaching hospitals in Canada. The statistically significant results showed that staff mix models with a lower proportion of professional nursing staff used more nursing hours. A statistically significant positive relationship was also found between patient/client complexity and nursing hour utilization in that the more complex patient/client utilized more nursing care resources. This mirrored the repeated finding of O’Brien-Pallas et al.^{40,57,76,82,104} which showed that increased patient/client complexity resulted in increased nursing hours of care.

5.0 Financial and human resources are dedicated to support an infrastructure of integrated electronic systems to effectively design, manage and evaluate the scheduling, staffing, workload measurement^c and patient/client flow processes to meet the needs of patients/clients, nurses, other providers and the health care system.

5.1 Nursing management is involved in and supports the development and integration of problem-solving tools, feedback processes, and monitoring systems (including indicators and data elements) linked to a comprehensive information management and decision support system.

Discussion of the Evidence^e

The literature reports that many organizations have automated their staffing practices. Sitomplu and Randhawa,¹⁰⁹ Bradley and Martin,¹⁵⁰ and Jelinek and Kavois¹⁵¹ extensively reviewed the literature on scheduling of health care professionals. Mathematical programming generally based on optimization concepts of linear programming is powerful, but not flexible. Goal programming^{152,153} is a more flexible method to compute nurse scheduling. Ruland and Ravn¹⁵⁴ described how the use of an information system designed to provide decision support for nurse managers related to financial management, resource allocation and activity planning resulted in a 41% reduction in overtime.

While the literature demonstrates validity and reliability of specific workload measurement systems (WMSs) at the point of implementation, there is a paucity of research regarding validation post-implementation.^{70,155-157} At best, most of the tools used to measure workload rely on a simple evaluation of face and content validity and interrater reliability.¹⁵⁶

The CNA nursing staff-mix literature review⁶⁶ reported that as changes in personnel, work environments, tools, equipment and technology occurred, corresponding changes in the time required to perform work also occurred. This suggests that review and revision of WMSs are necessary to ensure that standard times are accurate and that patient/client complexity is fully captured. Experts recommend that these reviews be conducted annually and on an ad-hoc basis when major work redesigns are undertaken.^{32,125}

In the practice setting, the face validity and content validity of WMSs must be updated at least annually, or more often if the case mix on a unit changes, and agencies must demonstrate that the quantification coefficients (i.e. the time weighting associated with each category) have been evaluated annually.¹⁵⁸ Ongoing monitoring of reliability is a prerequisite for maintaining validity. "It is recommended that interrater reliability monitoring be carried out on 10% of the cases classified annually and that checks should be completed at regular intervals throughout the year. For systems where patients/clients are placed in categories of care prior to assigning an hour's estimate, agreement between raters should be at least 95%. Category of care approaches need to be more stringent because incorrect categorization of a patient/client may result in a difference of hours, rather than minutes, being assigned to the patient/client".³²

e Type of Evidence

There is B and D type evidence for this recommendation

Health System Level Recommendations

Recommendations for Accreditation Bodies

6.0 Accreditation and approval bodies incorporate indicators that are comprehensive and reflect best practices in nursing staffing and workload management in approval and accreditation programs. The overall process of accreditation and approval is guided by an evidence-based model.

6.1 Health service organizations are accredited based on criteria that reflect recommendations in this HWE BPG including the range of variables that affect the delivery of high quality, safe and ethical care to patients/clients and provision of a safe work environment for nurses.

6.2 Nursing educational programs are approved and accredited based on criteria that reflect recommendations in this HWE BPG including the range of variables that impact the clinical and classroom work environments for students and faculty.

Discussion of the Evidence^f

In 2000 and 2001, the U.S. Department of Health and Human Services and the Centres for Medicare and Medicaid Services (CMS) jointly studied staffing ratios and released the findings in a report entitled “Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes.” Consistent links between staffing levels (numbers and/or mix) and patient/client outcomes were demonstrated. Patient/Client outcomes included the incidence of pressure ulcers, skin trauma and weight loss. Significant associations between nurse staffing and patient/client outcomes were observed until a certain threshold was reached. Beyond this threshold, no further detectable benefits were observed. These findings were consistent in all three categories of nursing staff (i.e. RNs, RPN/LPNs and nursing assistants). Of key significance, the study found a strong relationship between staff retention and positive patient/client outcomes related to patient/client safety.^{50,51} Aiken, Clarke, and Sloane, et al.⁷⁴ reported a 7% increase of failure to rescue and patient/client mortality within 30 days of admission. “Failure to rescue” is the term used to identify situations where nurses fail to notice the subtle signs of deterioration or complications and therefore do not provide skilled early interventions that can prevent negative outcomes for the patient/client. When higher levels of RN staffing are present, failure to rescue is reduced.^{18,74} Further, the Aiken study⁷⁴ demonstrated that if nurses’ workload increased from four to six patients/clients, the risk of patient/client mortality increased by 14%. These findings were taken from a large sample size ^{232,342} (medical/surgical patients/clients) within a large multi-centre context (168 hospitals). Rohrer, Momany and Chang⁵³ analyzed physical function for nursing home residents (n=827) and found that fewer heavy-care residents resulted in better resident functioning.

^f Type of Evidence

There is B and D type evidence for this recommendation

Recent studies have linked RN staffing to positive patient/client outcomes.^{79,159-162} Other studies have linked baccalaureate preparation with higher odds of better patient/client outcomes.^{58,59,76}

The relationship between care provided by RNs and positive patient/client outcomes has been attributed to the comprehensive assessment and surveillance skills of RNs which enable quicker detection of changes in the health status of patients/clients before their condition deteriorates beyond recovery. Improved patient/client outcomes have been directly linked to the competencies of RNs. Those competencies include: accurate diagnosis, critical thinking and problem-solving capabilities and supervisory skills. The costs of RN staffing have been demonstrated to be offset by productivity gains and cost savings associated with decreased length of stay and reduced rates of readmission.^{18,27,73,74,79,122,159,163,164}

Given the impact of nurse staffing and workload on patient/client outcomes, accreditation and approval organizations must consider the processes and practices in place within the organization that ensure that staffing and workload is effective. Education related to staffing and workload must also reinforce the importance of strategic, logistical and tactical levels of decision-making.

Recommendations for Governments

7.0	Federal, provincial, regional and local governments commit both financial and human resources to develop, implement, and evaluate care delivery models, policies and programs that support appropriate staffing and workloads ⁶ .
7.1	Governments commit to providing financial resources that facilitate the development of sustainable effective nursing staffing ⁶ practices within all health care organizations that foster healthy work environments ⁶ for nurses ⁶ .
7.2	The Principal Nurse Advisor ⁶ (PNA) is an integral part of the health system ⁶ decision decision-making authority at the federal/provincial/territorial ministry levels and has the requisite knowledge, authority and accountability related to nursing human resources.
7.3	The PNA has a sustainable budget to develop, support and evaluate a nursing human resources strategy that is integrated within a broad health human resources strategy.
7.4	The PNA is involved in health system planning and decision making related to nursing strategic planning and policy making, nursing staffing and workload matters.

Discussion of the Evidence^g

The American Nurses Association¹⁴¹ suggested that “there is a critical need to either retire or seriously question the usefulness of the concept of nursing hours per patient/client day”. The challenge remaining for future researchers is to determine whether the hospital-level adjustments (i.e. adjustments to HPPD reflecting case mix and patient/client complexity^c) are sensitive to unit-level nurse staffing. O’Brien-Pallas, Thomson and McGillis Hall, et al.⁴⁰ have identified numerous factors, which, with further testing, may be useful for this purpose.

Nursing workload and productivity are crucial components related to patient/client outcomes, quality of care, nurse outcomes and health system costs. A comprehensive literature review on workload and productivity conducted by O’Brien-Pallas, Meyer and Thomson³² noted that “although workload measurement systems have been in use for a number of years in the acute care sector, the conceptual adequacy of these measures and their psychometric properties have been relatively unexplored until the last two decades...” Furthermore, a paucity of research exists in measuring nursing workload productivity in non-acute care sectors including community, long-term and chronic care. Further research is needed to define a gold standard for measuring nursing workload”.³²

Determining the assignment of patients/clients to the most appropriate care provider is a complex process. Using an evidence-based approach to determine staff mix decisions will help to ensure more positive patient/client outcomes, better patient/client safety and enhanced quality of work life for nurses.^{1, 165}

The results of the *Comprehensive Systematic Review on the Impact of Workload and Staffing to Create a Healthy Work Environment*⁴⁶ suggested that “further systematic investigation is required to determine the impact nursing, patient/client and organizational characteristics have on determining staffing and workload levels and the resulting impact of staffing and workload levels on nursing, patient/client and organizational outcomes” (pg. 46).

g Type of Evidence

There is B and D type evidence for this recommendation

Recommendations for Research

8.0 Nurses in all roles, nursing and health services researchers, policy makers, decision makers, professional associations, unions, and the public work together to build the necessary evidence to inform staffing and workload best practices in the delivery of safe, competent, and equitable care to patients/clients^g.

Research that focuses on building evidence in next generation workload measurement systems^g in nurse staffing^g is accomplished by:

8.1 Allocating research funding to investigate the impact of length of shift, hours of work and environment on patient/client^g safety, nurse safety, quality of work life and continuity of patient/client care.

8.2 Working in partnerships to better understand the impact of changing health delivery models and innovative nurse staffing policies and workload management^g systems on patient/client, nurse and other health care provider, and system outcomes.

8.3 Focusing on better understanding the evolving and new roles for nurses and other health care providers (i.e. nurse endoscopists, physician assistants, nurse anesthetists) as well as the existing roles of RNs, RPNs/LPNs and RPsychNs and their impact on health, provider, and system outcomes.

Discussion of the Evidence^h

“Since the 1970s, nurse researchers have examined nurse staffing from the perspective of scheduling and productivity”.¹³¹ A key U.S. report generated by the Institute of Medicine Committee on the Adequacy of Nurse Staffing in Hospitals and Nursing Homes spear-headed ongoing research, and shifted the focus from scheduling and productivity to staffing and its relationship to patient/client outcomes.¹⁶⁶ Evolving definitions of nurse staffing have identified a number of elements to support models for determining optimal staffing, including “appropriateness of the number of staff, type or level of patient/client care required, skill level and mix of staff, number of patients/clients cared for on the assignment, cost efficiency and effectiveness, and their links to patient/client and nurse outcomes”.¹³¹

The CNA Nursing Staff Mix^g literature review focused on research related to nursing staff mix decisions based on licensed or regulated care providers (RNs and RPNs/LPNs) and the impacts on patient/client outcomes. The review found no research related to the RPN/LPN in relation to the determination of staff mix. Steps 5 and 6 of the Nursing Sector Study noted that several concepts are intertwined in the research, rendering them difficult to separate and summarize. Much of the research studied the numbers of staff needed rather than the actual staff mix linked to positive patient/client outcomes.

^h Type of Evidence

There is B and D type evidence for this recommendation

Considerable progress has been made in advancing the science of workload measurement beyond a focus on nursing tasks and medical conditions. Nurse researchers and theorists recognize that provision of nursing services is influenced by a complex array of health care system inputs (e.g. patient/client, provider and agency characteristics), throughputs (e.g. practice environment) and outputs (e.g. for patient/client, providers and the system).³²

Future research must establish clear links between effective nursing leadership and positive patient/client outcomes to ensure that the contribution of nursing to patient/client care is recognized.³² O'Brien-Pallas, Thomson, D., McGillis Hall, et al.^{40,76} found that strong ratings of nursing leadership were associated with fewer critical incidents. While the literature on staff mix has been enriched over the past five years and has focused on the relationship between patient/client outcomes and staff mix, there is a dearth of published research focusing on the evaluation of nursing staff mix decision-making.^{18,27,28,73} McGillis Hall identified the need for further research into the links between the nursing work environment and patient/client outcomes. Specific work environment elements requiring further research include: level of autonomy and decision-making of nurses; organizational culture and climate; interrelationships among nurses and team members; and relationships with unit managers and nurse leaders⁶. McGillis Hall et al.¹⁶⁷ also recommended that future work is needed to assess the association between staff mix models that employ higher proportions of unregulated workers as part of the “all types of nursing care providers” and patient/client outcomes.

Process for Reviewing and Updating the Healthy Work Environments Best Practice Guidelines

The Registered Nurses' Association of Ontario (RNAO) proposes to update the Healthy Work Environments Best Practice Guidelines as follows:

1. Each healthy work environments best practice guideline will be reviewed by a team of specialists (Review Team) in the topic area to be completed every five years following the last set of revisions.
2. During the period between development and revision, RNAO Healthy Work Environments project staff will regularly monitor for new systematic reviews and studies in the field.
3. Based on the results of the monitor, project staff may recommend an earlier revision plan. Appropriate consultation with a team of members comprising original panel members and other specialists in the field will help inform the decision to review and revise the guideline earlier than the five-year milestone.
4. Six months prior to the five-year review milestone, the project staff will commence the planning of the review process by:
 - a) Inviting specialists in the field to participate in the Review Team. The Review Team will be comprised of members from the original panel as well as other recommended specialists.
 - b) Compiling feedback received, questions encountered during the dissemination phase as well as other comments and experiences of implementation sites.
 - c) Compiling relevant literature.
 - d) Developing detailed work plan with target dates and deliverables.
 - d) The revised guideline will undergo dissemination based on established structures and processes.

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Appendix A: Glossary of Terms

Collaboration: The process of working together to build consensus^c on common goals, approaches and outcomes. Collaboration requires an understanding of one's own and others' roles, mutual respect among participants, commitment to common goals, shared decision-making, effective communication and accountability for both the goals and team members.¹⁶⁸

Consensus: A collective opinion arrived at by a group of individuals working together under conditions that permit open and supportive communication, such that everyone in the group believes she or he had an opportunity to influence the decision and can support it to others.

Continuity of Care: A seamless, continuous implementation of a plan of care that is reviewed and revised to meet the changing needs of the patient/client. The care may be provided by various care providers, at various times in various settings.

Critical Reviews (CRs): Essays/papers based on scholarship (i.e., on finding and reading the literature on a topic, and adding your own considered arguments and judgments about it). Critical Reviews thus involve both reviewing an area, and exercising critical thought and judgment. Retrieved August 2, 2006 from <http://www.psy.gla.ac.uk/~steve/resources/crs.html#What>

Descriptive Co-relational Studies: Studies that examine and describe how variables are related to one another, they are used to make predictions from present circumstances to future ones. Retrieved September 2, 2007 from: <http://www.ualberta.ca/~carmen/212a1/Chapter6final.ppt>

Empowerment: The ability to mobilize human and material resources to objectives.¹⁶² A process through which stakeholders influence and share control over development initiatives, and the decisions and resources which affect them. Retrieved October 6, 2005 from: <http://www.worldbank.org/afr/particip/keycon.htm>

Expert Opinion: The opinion of a group of experts based on knowledge and experience and arrived at through consensus.

Health System: The network of health care organizations that interact to provide an integrated system.

Healthy Work Environments: A healthy work environment for nurses is a practice setting that maximizes the health and well-being of nurses, quality patient/client outcomes and organizational performance.¹⁶⁹

Healthy Work Environments Best Practice Guidelines: Systematically developed statements based on best available evidence to assist in making decisions about appropriate structures and processes to achieve a healthy work environment.¹⁷⁰

Integrative Review: A review process that includes (1) problem formulation, (2) data collection or literature search, (3) data evaluation, (4) data analysis, and (5) interpretation and presentation of results. Retrieved August 2nd, 2006 from:

http://www.findarticles.com/p/articles/mi_qa4117/is_200503/ai_n13476203

Leadership: A relational process in which an individual seeks to influence others towards a mutually desirable goal.

Logistical Nursing Staffing Decision Making: Those decisions and judgments that result in overall staffing directions at the unit and team level related to baseline staffing levels, replacement staffing method (e.g. float pool) and scheduling approaches and methods (e.g. self scheduling, master scheduling, 12-hour shift, 8-hour shift, etc.) to meet nursing care and management objectives.

Logistical Patient/Client Flow Decision Making: Those decisions and judgments that result in overall approaches to the intake or admissions of patient/clients in order to meet patient care and management objectives.

Magnet Hospital: A label originally applied to hospitals in the United States in the early 1980s that were able to recruit and retain nurses despite a national nursing shortage. The term now refers to designated facilities that have been certified by the American Nurses Credentialing Center for their excellence in nursing practice. These institutions have better than average achievement of nursing job satisfaction and patient/client outcomes due to specific organizational characteristics.^{171,172}

Meta-analysis: The use of statistical methods to summarize the results of several independent studies, thus providing more precise estimates of the effects of an intervention or phenomena of health care than those derived from the individual studies included in a review.¹⁷³

Nurses: Refers to Registered Nurses, Licensed Practical Nurses (referred to as Registered Practical Nurses in Ontario), Registered Psychiatric Nurses, nurses in advanced practice roles such as Nurse Practitioners and Clinical Nurse Specialists.

Nursing Effort: The cognitive, emotional, physical and social effort involved in caring for, responding to and supporting others in a manner that diminishes vulnerability, protects dignity and promotes well-being.

Nursing Leadership: Leadership that is grounded or situated in nursing.¹⁷⁴

Nursing Management Logistical Decision-Making: A combination of logistical nursing staffing decision-making^G and logistical patient/client-flow nursing decision-making^G.

Nursing Management Strategic Decision-Making: A combination of strategic nursing staffing decision-making^G and strategic patient/client-flow nursing decision-making^G.

Nursing Management Tactical Decision-Making: A combination of tactical nursing staffing decision-making^G and tactical patient/client-flow nursing decision-making^G.

Nursing Productivity: This is defined as unit workload divided by hours worked.

Nursing Staff Contingency Staffing: This refers to staffing needed in addition to baseline staff in order to maintain the appropriate workload for staff while meeting patient needs.

Nursing Staff Skill Mix: This refers to the joint distribution of nursing personnel per skill category (i.e. RN, RPN/LPN, etc.) and per skill level.

Nursing Staff Status Mix: This refers to the full-time, part-time, casual and agency employment status of actual staff.

Nurse Staffing / Nursing Staffing: The process of determining the appropriateness of the number of nursing staff, type or level of patient/client care required, skill level of nursing personnel and mix of nursing personnel categories to yield positive, cost efficient and effective outcomes for patients/clients and nurses.

Nursing Unit: In the context of this guideline document “nursing unit” refers to a group of nurses who are identified as working together to deliver a particular set of programs of nursing services.

Organizational Climate: Social, organizational, or situational influence on behaviour, reflected in overall performance or policies and practices and goals; how things are done;¹⁷⁵ the aspects perceived by individual organization members.¹³⁰

Organizational Culture: The underlying values, assumptions and beliefs in an organization.

Patient/Client: In the context of this guideline document the phrase “patient” and “patient/client” can refer to “patient”, “client”, “user”, “beneficiary”, “resident”. Recipient(s) of nursing services including individuals, (family member, guardian, substitute caregiver) families, groups, populations or entire communities. In education, the client may be a student; in administration, the patient/client may be staff; in research, the patient/client is a study participant.^{176,177}

Patient/Client Acuity: Patient/client acuity reflects the degree of stability of the patient/client health status. The more unstable this status, the greater the difficulty in predicting its evolution, and thus predicting care required by the patient/client and the attendant nursing workload^G.

Patient/Client Complexity: Many factors may contribute to the complexity of a case, e.g. utilization^G of new or unfamiliar technical procedures; accumulation of sophisticated technical procedures; interactions of the patient/client; patient/client cognitive, affective social and physical problems, requests of the patient/client and relatives and involvement of other team members

Patient/Client Day: A patient/client day is the unit of measure denoting a 24 hour period of inpatient stay.

Patient/Client Severity: A measure of the overall condition of the patient/client with respect to health outcomes.

Principal Nurse Advisor: The nurse leader who is an integral part of the health system^c at the Provincial/Federal ministry level, and has the requisite knowledge, authority, accountability and budget to develop, support and evaluate a nursing resources strategy that is integrated into a broad health human resources strategy. The Principal Nurse Advisor is involved in health system planning and decision-making related to nursing strategic planning and policy making, nursing staffing^c and workload^c matters.

Professional: In health care, refers to those who provide the patient/client with preventative, curative and rehabilitative care¹⁷⁸ and who have undergone education in a program of study accredited by a governing body, and who are required to maintain ongoing competence through their relevant regulatory body.¹⁷⁸

Qualitative Studies/Research: Methods of data collection and analysis that are non-quantitative. Qualitative research uses a number of methodologies to obtain observation data or interview participants in order to understand their perspectives, world view or experiences.

Social Supports: The transactions that occur within a person's social network that involve providing encouragement, sympathy and appreciation, or otherwise interacting with people in ways that support them emotionally.¹⁷⁹

Retrieved March 3, 2005 from: <http://www.lin.ca/resource/html/Vol25/v25n4a2.htm>

Span of Control: The number of people (not full-time equivalent positions) who report directly to a single manager, supervisor, or leader.¹⁸⁰

Strategic Nursing Staffing Decision-Making: Those decisions and judgments that result in overall approaches to nursing care delivery, such as staff skill mix (RN, RPN, etc), staff status mix, (FT, PT, etc.) staffing levels and model of care delivery.

Strategic Patient/Client Flow Decision-Making: Those decisions and judgments that result in directions regarding patient/client type, severity and volumes to be cared for by nursing teams or on nursing units, and relevant policies to support these decisions.

Systematic Review: Application of a rigorous scientific approach to the preparation of a review article.¹⁸⁰ Systematic reviews establish where the effects of health care are consistent, and where research results can be applied across population, setting, and differences in treatment and where effects may vary significantly. The use of explicit, systematic methods in reviews limits bias (systematic errors) and reduces chance effects, thus providing more reliable results upon which to draw conclusions and make decisions.¹⁷³

Tactical Nursing Staffing Decision-Making: Those decisions and judgments made on a day to day and/or shift to shift basis that result in necessary staffing adjustments to safely meet the needs of patients/clients on an consistent basis, in light of changes in staff availability and or patient/client needs.

Tactical Patient/Client Flow Decision-Making: Those decisions and judgments made on a day to day and/or shift to shift basis that result in changes in requirements for nursing care due to rescheduling of admissions, programs or visits, and/or transferring of patients/clients.

Team: A number of persons associated together in work or activity.

Merriam-Webster on-line dictionary: <http://www.m-w.com/cgi-bin/dictionary>

Utilization: Reflects the actual number of nursing hours adjusted to reflect complexity of patients/clients in a unit sub-unit or agency.

Workload: The amount and type (i.e. direct and indirect) of nursing resources needed by a nurse to care for an individual patient/client on a daily basis.¹⁵⁸

Workload Management: The process of effectively managing changes in patient/client acuity and volume. Germane to effective workload management is the process of measuring, tracking and monitoring trends in nursing workloads^c. Workload management involves collaborative practices in problem-solving and decision-making related to workload challenges (e.g. skill mix, patient/client acuity, scheduling practices and staff replacement).

Workload Measurement: The process of quantifying the amount of direct and indirect care time required by patients/clients on a given shift in a specific unit, program, or facility.

Workload Measurement System: As defined in the Management Information System Guidelines, 2004, a time-based tool that measures the volume of activity provided by the Unit Producing Personnel (i.e. hands-on care providers) of a specific functional centre (i.e. nursing unit or program) with respect to standardized unit time.¹⁸² Examples include vendor-developed methodologies, and institutional and regional developed methodologies such as PRN, QUADRAMED, MEDICUS, and GRASP.

Workload Planning: Consideration of system inputs (patient/client and nurses, and system characteristics and behaviours) throughputs and achievement of expected outcomes (for the patient/client, nurse and system) of care delivered in order to ensure that staffing levels are sufficient to provide safe, effective and ethical nursing care within a system. This includes consideration of the category of provider working to their full scope of practice, proportion of full- and part-time, permanent and casual labour. The dynamic nature of workload planning is enhanced by examination of feedback from outcomes to determine the daily requirements of patients/clients needs for nursing care.

Appendix B: Principles and Strategies for Effective Staffing and Workload Practices

Principles for Effective Staffing and Workload Practices

Staffing levels and schedules will support the delivery of safe, effective and ethical nursing care, including:

- Providing sufficient levels of appropriately skilled nurses to meet client care requirements.
- Maximizing continuity of care^c and of caregiver.
- Enhancing the stability of the nursing profession by maximizing the number of permanent (full- and part-time) positions.
- Developing schedules and rotations to meet the baseline workload requirements.
- Providing mechanisms and staffing to meet fluctuating patient/client acuity and workload and replacement requirements.
- Responding to staff work-life considerations and their impact on recruitment and retention.
- Maintaining cost efficiency, including minimizing the use of overtime and agency staffing.
- Acting in a fair and equitable manner toward all categories of nursing staff.
- Complying with relevant collective agreements, organizational policies and scopes of practice.
- Including the principles of staffing and workload in orientation for new managers.

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Strategies for Effective Staffing & Workload Practices

Rotations and length of shift

Developing work schedules is both an art and a science, and demands creativity and flexibility. There is no single correct template; however, a greater degree of success is found in a consistent approach to principles of scheduling built on fairness and transparency. The health and stamina of the nursing team will vary, and a flexible and responsive schedule pattern allows for a complementary mixture of rotations. The choice of rotations and shift lengths available on units should be predicted on finding a balance of patient requirements for care, unit characteristics, administrative policies and the needs and desires of staff. Openness to offering a variety of shift lengths within one schedule and staggering start times of shifts to meet peak workflow periods are examples of creative initiatives.

Twelve-hour shifts are popular with many nurses, as they provide opportunities to compress the work week and gain more days off. There is some evidence, however, that increased shift lengths reduce alertness and performance, and affect safety.¹⁸³ One study challenges the negative findings of adopting 12-hour rotations and argues for increased job satisfaction, improved communication and continuity of care.¹⁸⁴ The risks of errors has been shown to increase significantly when shifts are longer than 12 hours, when nurses work overtime, or when work is \geq forty hours per week.

A 12-hour scheduling innovation of a continuous pattern of two days and two nights followed by five days off duty (four/five pattern) is gaining popularity with nursing groups. The scheduling appears to support the opportunity for periods of continuity of care for the patient and recovery from fatigue for the nurse, even though it impinges on weekend hours.

There is also some evidence that shift workers who sleep at the same time every day have better health.¹⁸⁵ Rotating shift work can have a detrimental effect on health and wellbeing, particularly with older workers. Collaborating with Occupational Health departments in health care institutions to share strategies that promote a healthier environment helps nurses to adapt supportive life style choices to reduce the detrimental effects of rotating shifts. The use of permanent night shifts – for those nurses who choose to do so – may be a strategy to reduce the number of night shifts that other nurses must work. Organizing rotations to minimize the impact on the circadian cycle, finding opportunities to repay sleep debt incurred by night shift, limiting rotation cycles, completing challenging tasks before 4 a.m., offering breaks that include power naps, and providing adequate lighting in work areas and access to healthy food instead of vending-machine fare are just a few strategies to combat fatigue, decreased alertness and long-term health issues.

Weekend workers are another relatively new strategy, which, while slightly more expensive, may support organizations in providing adequate staffing on weekends without relying on costly short-notice replacement. Managers are encouraged to conduct a cost benefit analysis and a pilot schedule of at least six months of weekend workers to determine the appropriateness for their organization.

Self-scheduling

Self-scheduling is an approach whereby the nurses on a unit or team collectively decide and implement the nursing schedule. It is the responsibility of individual nurses to select their shifts in a manner consistent with organizational policies and collective agreements, and negotiate with their colleagues to make any changes or accommodations, balancing the need to provide appropriate shift coverage with individual choice.

The model works best if supported by a shared governance framework. Reaching consensus prior to posting the schedule requires a team that is comfortable with the collaborative approach, has supportive, strong leadership and operates with adherence to written detailed protocols and processes that address organizational and unit-specific goals and outcomes.

Parameters to consider in self-scheduling

1. Assign shifts to maximize continuity of care and caregiver.
2. Use visual cues on draft schedules to guide appropriate assignment of staffing levels, including knowledge and skill, on a shift to shift basis.
3. Self scheduling occurs against a master schedule with a predetermined number of shifts to be filled on a daily and shift by shift basis
4. Weekend time periods are clearly defined.
5. Full time and part time staff must work their budgeted complement and their required percentage of weekend and shift.
6. Staff will have equal access to preferred tours on a rotational basis.
7. Written scheduling guidelines includes a process to reach consensus on the length of time available to each rotational group to choose to preferred shifts and negotiated exchanges.

Top reasons to consider a new schedule

1. Casual staff are being pre-booked on a regular basis
2. High overtime hours
3. Frequent staff requests for changes
4. Staffing levels are uneven by day of week and do not match workload
5. Significant program change
6. Regular scheduling of unbudgeted positions
7. Insufficient flexibility to provide coverage on short notice
8. Increased time spent on daily replacement
9. High vacancy /turnover rate
10. High staff complaints regarding scheduling
11. Increased workload grievances

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Vacation scheduling considerations

Nurse Managers must review and plan for staff vacation requirements on a regular basis. The first step is to establish a quota for the maximum number of staff that can be granted time off at any one time. The quota may vary according to time of year, and should be developed for both permanent full and part-time staff. This quota should be established early in the fiscal year, and be reviewed with input from staff on an annual basis. The following factors should be considered when establishing a quota:

- Number of permanent staff
- Total vacation entitlement of permanent staff
- Number of vacant lines (actual and predicted)
- Estimated daily replacement requirements (absenteeism, stats, education, etc.)
- Minimum number of required permanent staff on daily and shift basis
- Ability to replace (i.e. consider number of casual hours likely to be available)
- Experience level of staff

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Assessing your staffing level and composition

How do you know if you have the “right” staffing level and composition?

Many nurse leaders struggle with determining the right level of staffing for their particular patient population. There are several approaches to assessing the appropriateness of your staffing decisions.

Workload measurement systems: Organizations with workload measurement systems can use the data to assess variance between actual and required levels of staffing. To do so requires that the system be valid and reliable.

Benchmarking with like organizations or programs: Many organizations engage in benchmarking exercises to assess the appropriateness of staffing. According to Six Sigma,¹⁸⁶ benchmarking is a process used by organizations to assess various aspects of their performance against other companies’ best practices, usually within their own sector. This enables the organization to formulate plans on how to adopt such best practice, to improve their own performance. Benchmarking is often seen as a continuous improvement tool in which organizations continually seek to challenge their practices.

Benchmarking exercises are usually voluntary, and occur when an organization seeks to compare itself with others in order to identify opportunities they may not have otherwise recognized. These exercises must be carefully planned and critically interpreted to ensure that they add value, rather than focus on unreasonable comparisons. To achieve the greatest benefit from benchmarking for staffing, nurse leaders need to determine if the focus of the benchmarking exercise and best practices identified centre on efficiency or on quality. If the focus is on efficiency more than quality, results may not address staffing that contributes to quality outcomes for patients and nurses. In addition, benchmarks are frequently an average, compiled from several organizations, or in some cases, from unknown organizations, thus may not be possible to determine how similar these organizations are to the organization undertaking the benchmarking exercise.¹⁸⁶

Nurse leaders involved in benchmarking should be confident that they understand the methodology being used, and that they ask the appropriate questions to be clear enough about the process to determine if the benchmarking exercise involves comparable organizations. This includes knowing (if possible) the comparator organizations and, most importantly, understanding their own cost centres, thereby ensuring that an “apples to apples” approach is being used.

Quality outcomes: The growing body of evidence linking nurse staffing (in particular increased numbers and an increased proportion of RN staff) to client outcomes suggests that one way to improve quality is to alter staff complement and type. In fact, the patient safety movement and the relationship between nurse staffing decisions and adverse patient outcomes demonstrates the value of a strong, stable, regulated nursing staff complement. When using this approach be prepared to demonstrate, through quantitative data, whether the gains from increasing staff or changing staff mix to include more regulated staff translate into either reduced costs overall (e.g. reduced length of stay, reduced complication rates) or, if costs are increased, that the value of the quality improvement justifies increased spending on staffing.

Resource List

The following references listed in alphabetical order, were used to compile Appendix B.

Bloodworth C, Lea A, Lane S, et al. (2001). Challenging the myth of the 12-hour shift: a pilot evaluation. *Nursing Standards*. 15:33-36.

Bonner R, Beaumont R, Smith B. (1995). Changing rosters – managing roster change. *Australian Nursing Journal*. 3:36-38.

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Harrington JM. (2001). Health effects of shift work and extended hours of work. *Occupational Environmental Medicine*. 58:68-72.

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Learthart, S. (2001). Health effects of internal rotation of shifts. *Nursing Standard*. 14:34-46.

Lowden A, Kecklund G, Axelsson J, et al. (1998). Change from an 8 hour shift to a 12 hour shift, attitudes, sleep, sleepiness and performance. *Scandinavian Journal Work Environmental Health*. 24(suppl 3):69-75.

Smith PA, Wright BM, Mackey RW, et al. (1998). Change from slowly rotating 8-hour shifts to rapidly rotation 8 hour and 12 hour shifts using participative shift roster design. *Scandinavian Journal Work Environmental Health*. 24(suppl 3):55-61.

Smith-Coggins R, Howard SK, Mac DT, et al. (2006). Improving alertness and performance in emergency department physicians and nurses. The use of planned naps. *Annals of Emergency Medicine*. 48:596-604.

Spiegel D, Sephton S. (2002). Re: Night shift work, light at night, and risk of breast cancer [letter]. *Journal National Cancer Institute*. 94:530. Available at <http://jnci.oxfordjournals.org/cgi/reprint/jnci%3b94/7/531.pdf>. Accessed August 20, 2007.

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Appendix C: Process for Systematic Review of the Literature on Developing and Sustaining Effective Staffing and Workload Practices

1. An initial limited search was undertaken by the Joanna Briggs Institute⁴⁶ to identify optimal search terms. Analysis of text words contained in the title and abstract, and of the index terms was completed. The search was limited to:

- CINAHL
- Medline

2. Search Terms identified included:

- Agency staff
- Coverage of breaks
- Effectiveness or feasible or meaningfulness or appropriateness
- Employment status
- Fixed staff
- Float staff
- Fluctuating staff
- Full-time staff
- Novice to expert
- Nurse patient/client ratio
- Nurse schedule
- Nurse staffing
- Nursing workload
- Overtime
- Part-time staff
- Patient/Client or nurse or system characteristics
- Patient/Client or nurse or system or organization outcomes
- Quantity of staff
- Roster
- Scheduling
- Shift work
- Skill level skill mix staff turnover
- Staff scheduling
- Staff stability
- Staffing level
- System processes
- Workload acuity
- Workload complexity

- Workload manager
- Workload measures
- Workload plan

- 3. The search strategy sought to find published and unpublished studies and papers, limited to the English language. An initial limited search of MEDLINE and CINAHL was undertaken followed by an analysis of the text words contained in the title and abstract and of the index terms used to describe the article. A second-stage search using all identified keywords and index terms was then undertaken using the search terms listed above.**

Databases searched in the second stage included:

- CINAHL (1982 to January 2003)
- OVID Medline (in Process and Other Non-Indexed Citations)
- MEDLINE (1966 to January 2003)
- Current Contents (to September 2003)
- Cochrane Library
- PsychINFO (1966 to 2003)
- Embase (1980 to 2003)
- Sociological Abstracts
- Econ lit
- ABI Inform
- ERIC
- PubMed

The search for unpublished studies included:

- Dissertation Abstracts International

- 4. Studies identified during the database search were assessed for relevance to the review based on the information in the title and abstract. All papers that appeared to meet the inclusion criteria were retrieved and assessed again for relevance to the review objective.**
- 5. Identified studies that met inclusion criteria were grouped into type of study (i.e. experimental, descriptive, etc.).**
- 6. Papers were assessed by two independent reviewers for methodological quality prior to inclusion in the review using an appropriate critical appraisal instrument from the SUMARI package (System for the Unified Management, Assessment and Review of Information), software specifically designed to manage, appraise, analyze and synthesize data.**

Disagreements between reviewers were resolved through discussion and if necessary with the involvement of a third reviewer.

Results of Review

- Forty papers were included in the review: one systematic review, one cohort study and 38 correlational descriptive studies.
- The review examined the extent to which staffing and workload concepts affected particular outcomes, with patient/client outcomes being the main focus.

The review suggested that nursing staffing and workload may be composed of various factors related to:

- Patients/clients
- Nurses
- Health systems
- System behaviours

The review identified the following recommendations for practice:

- Patient/Client severity of illness is taken into account when considering staffing and workload issues.
 - The relationship between the hours and proportion of RNs and patient/client outcomes should be noted when determining workload and scheduling of nurses.⁴⁶
 - When establishing staffing and workload policies, organizations should recognize that there is some limited evidence to support the relationship between higher intensity staffing and lower incidences of failure to rescue and mortality, decreased job satisfaction, staff turnover, hierarchical approaches to decision-making.⁴⁶
 - Reliance on agency nurses (casual staff) should be decreased to improve nurses' perceptions of standards of care.
 - Nurses are enabled to determine their shift allocations to enhance their professional commitment and thus the care they provide to patients/clients.

The review provided the following recommendations related to future research initiatives.

- The concepts of healthy work environments are clarified through research that identifies the nature, characteristics and exemplars of such environments.
 - Further research is conducted to examine the effects of staffing and workload in the workplace.
 - Further research is conducted to determine the effects of patient/client, nurse and organizational characteristics on workloads and scheduling.
 - Further research is conducted to determine the relationship between nursing groups other than RNs.
 - Further research is conducted to investigate the impact of workload and scheduling on nurses and health care organizations.
 - Further research is conducted to examine the relationship between lower nurse staffing levels and higher incidence of complications rates in patients/clients undergoing aortic abdominal surgery.
 - Further research is conducted to examine the relationship between increased patient/client-to-nurse ratios and perceived workloads.
 - Further research is conducted to investigate the impact of unlicensed care givers on patient/client outcomes.

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 **RNAO** Registered Nurses' Association of Ontario
L'Association des infirmières et infirmiers
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NURSING BEST PRACTICE GUIDELINES PROGRAM

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