Better Care:

An Analysis of Nursing and Healthcare System Outcomes

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Dr. Gina Browne, PhD, RegN
McMaster University, Hamilton, Ontario
Faculty of Health Sciences: School of Nursing,
Health and Social Service Utilization Research Unit,
Department of Clinical Epidemiology and Biostatistics

Stephen Birch, PhD
McMaster University, Hamilton, Ontario
Faculty of Health Sciences: Department of Clinical Epidemiology and Biostatistics,
Centre for Health Economics and Policy Analysis

Lehana Thabane, PhD
McMaster University, Hamilton, Ontario
Faculty of Health Sciences: Health and Social Service Utilization Research Unit,
Department of Clinical Epidemiology and Biostatistics,
Centre for Health Economics and Policy Analysis

and team

Canadian Health Services Research Foundation

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CHSRF
1565 Carling Avenue, Suite 700
Ottawa, Ontario
K1Z 8R1

Email: info@chsrf.ca
Telephone: 613-728-2238
Fax: 613-728-3527

KEY MESSAGES

Problems arise when circumstances in the world change and conventional wisdom does not.

- The present federally funded Canadian healthcare system has been driven principally by insured physicians and hospitals providing acute and episodic care that is a poor match to the changing demographics of persons with chronic disease living longer. The current health system consumes nearly one-half of provincial budgets.

There are solutions.

- Recent analysis of 2005 expenditures by member countries of the Organisation for Economic Co-operation and Development on health and social services has empirically demonstrated that, after adjusting for overall gross domestic product per capita, it is the ratio of social service expenditures to health service expenditures that is better associated with improved outcomes in key health indicators and not the amount spent on health services.
- Models of proactive, targeted nurse led care that focus on preventive patient self-management for people with chronic disease are either more effective and equally or less costly, or are equally effective and less costly than the usual model of care.
- Additional key components of more effective and efficient healthcare models involve community-based, nurse led models of care with an interdisciplinary team that includes the primary care physician. Such complex intervention requires specially trained or advanced practice nurses who supplement the care provided by physicians and other healthcare professionals. The proactive, comprehensive, coordinated model of community care is patient and family centred, targeted at community-dwelling individuals with complex chronic conditions and social circumstances.
- Telemonitoring offers added effectiveness and efficiencies to healthcare, especially for remote populations.
- The monitoring, evaluation and performance measurement system for the provision of healthcare should build on and link to pan-Canadian efforts already under way, such as the Longitudinal Health and Administrative Data Initiative.
- Nurse-led models of care can be financed by costs averted from hospitals and emergency departments to home or community care. For example, after managing the current hospital caseload of patients awaiting alternative levels of care, the number of hospital beds could be reduced to free up funds for this reallocation of funding.
- In Ontario alone, representing 37% of the Canadian population, independent reports estimate that millions of dollars could be saved in direct healthcare costs within one year by:
  - having nurses provide leading practices in home wound care
  - integrating nurse-led models of care to reduce high hospital readmissions by 10% for those with chronic conditions
  - providing 25% of palliative care in the home as opposed to in acute hospital settings
  - providing community care for patients in hospital designated as needing an alternative level of care
  - providing proactive community care and patient self-management for those with congestive heart failure and other chronic conditions

Getting from problems to solutions is possible.

These recommended models of nursing for chronic illness align with the *Principles to Guide Health Care Transformation in Canada* put forward by the Canadian Nurses Association and the Canadian Medical Association (CMA) in July 2011 (available at http://www.cma.ca/multimedia/CMA/Content_Images/Inside_cma/Advocacy/HCT/HCT-Principles_en.pdf).

Further, the models align with the CMA's proposed Charter for Patient-centred Care and other recommendations made in the 2010 report *Health Care Transformation in Canada: Change That Works, Care That Lasts* (available at http://www.cma.ca/multimedia/CMA/Content_Images/Inside_cma/Advocacy/HCT/HCT-2010report_en.pdf). For example, the following points apply fundamentally to both the CMA's recommendations and the models recommended here:

- The central role of all levels of government is to provide for and sustain the well-being of its citizens and future generations.
- The question of direction for government is one of continued growth and expansion of health (illness) care or sustainability of the quality of life and the human service system that determines health.
- Addressing the source of and reasons for excessive and growing health expenditure would include (a) providing nurse-led proactive, comprehensive and preventive care for those with chronic illness, (b) financing by reducing resources for current acute hospital care, and (c) having physicians and nurse practitioners continue to practise acute and episodic care.

EXECUTIVE SUMMARY

The purpose of this review of nursing intervention literature was to document the comparative effects and costs of models of nursing intervention on patient outcomes, such as morbidity and mortality, and on system outcomes, such as health resource use. This information will be used to provide suggestions about innovative, effective and efficient models of nursing intervention in preparation for the 2014 new federal health accord.

Eligible reviews and studies were those of interventions provided by nurses that documented:

- patient outcomes related to mortality and morbidity, such as functional status, quality of life, coronary or adverse events, and caregiver burden; *and*
- system outcomes related to use of emergency departments, hospitalizations, length of stay, admissions to nursing homes, and/or total direct cost of health service use from a payer perspective; *or*
- patient impacts related to wait times or access to care.

This review was conducted in three stages:

1. In the initial stage we evaluated high-quality *reviews*.
2. The second stage involved reviewing high-quality *studies* of nursing interventions because of limitations in the initial reviews.
3. In the third stage we reviewed studies from McMaster University's System-Linked Research Unit on Health and Social Service Utilization (SLRU) that involved economic evaluations conducted from a societal perspective alongside clinical trials. In addition, these studies included not only patient outcomes but also health and social effects – direct, indirect and cash transfer effects – of comparative treatments for various illnesses. We did this third stage because the description of costing methods in the previous studies lacked detail.

Results

To determine whether nurse interventions were comparatively more effective and less costly, we used an analytic framework for economic evaluations to simultaneously summarize the patient effects and system costs qualitatively and in aggregate. We initially examined over 4,000 reviews and studies to determine whether they met both eligibility criteria and "high-quality standards" for the conduct of reviews and studies. Twenty-seven reviews, 29 studies and nine economic evaluations met the initial minimum eligibility criteria and 75% of the 21 standards of quality for reviews and studies. Included studies were conducted in the United Kingdom, Canada, Australia, the United States and the Netherlands. Included economic evaluations were conducted in southern Ontario.

Our review of data from *27 high-quality reviews* of comparative models of nursing care for people with chronic conditions supported the following conclusions about nursing models of care with interdisciplinary teams (whether nurse-involved, n = 13, or nurse-led, n = 14) versus usual care: 13 reviews indicated that nursing interventions were more effective and less costly than usual care; six showed that they were more effective and equally costly; four suggested that they were equally effective but less costly; three indicated that they were equally effective and equally costly; and one review suggested that such models were more effective and more costly than usual care.

Our review of data from *29 high-quality studies* of comparative models of nursing care for people with chronic conditions supported the following conclusions about nursing models of care (whether nurse-involved, n = 4, or nurse-led, n = 25) versus usual care: 14 studies indicated that nursing interventions were more effective, and 12 of these, also less costly; two of these 14 showed them to be no more costly; seven studies suggested nursing models were equally effective and less costly; five, equally effective and equally costly; and three, equally effective and more costly.

Eight of the nine Ontario economic evaluation studies done by McMaster's SLRU concluded that the nurse model for people with chronic conditions was more effective. Specifically, three studies showed that the more effective nurse model was less costly; four other studies concluded that the more effective nurse model was no more costly; one study found that the nurse model was more effective and more costly, but only for a particular subgroup of patients; and one study demonstrated that the nurse model was equally effective as usual care and equally costly.

Innovative Nursing Interventions Documenting Similar Patient and System Outcomes at a Provincial Level

The limited time available for preparing this report necessitated the use of recent independent reports that estimated patient situations well served by nursing best practice interventions, both on their own and as part of interdisciplinary teams. Most of these recent reports came from Ontario, representing 37% of the Canadian population. The following highlights of these reported nursing intervention innovations could potentially produce healthcare savings for other provinces as well:

- For 22% of Ontario patients with pressure ulcers who were treated in the community with best practice nursing and for 30% of such patients treated in non-acute settings, there was a reduction in healing time that yielded an estimated savings of $18,000 ($9,000 per month) per patient.
- In Ontario in 2007 there were 90,000 patients with diabetic foot ulcers and 15,000 more patients with leg ulcers; their community care cost $511 million yearly. It was estimated that $338 million in community costs could be saved by leading practices of nurses in wound care and that $24 million in further savings would be possible as a result of reduced hospitalizations for infections and amputations.
- Shifting 25% of the 6,084 palliative care patients who were in acute care beds (costing $19,900 per patient) in 2006 to home care (costing $4,700 per patient) could result in estimated savings of $15,200 per patient, which would translate to $23 million in annual savings for Ontario.
- An analysis of the 2007 Ontario Chronic Disease Prevention and Management Framework estimated that every 10% reduction in expenditures for chronic illness in Ontario would result in annual savings of $1.2 billion for the province.
- According to a 2010 collaborative report, 1% of the Ontario population accounted for 49% of combined hospital and home care costs, and 5% of the population accounted for 84% of these costs, driven principally by high hospital readmission rates for chronic diseases. Based on forecasted 2009 hospital expenditures in Ontario, a 10% reduction in the $8 billion spent on acute care for the 1% of citizens (approximately 130,000) could result in potential savings of $800 million annually that could be used for chronic disease management in the community or at home.
- In Alberta, a study of heart failure care following hospitalization showed an average reduction in hospital use of 3.6 days per participant, resulting in savings of roughly $2,500 per case.
- More than 3,000 Ontarians in acute care hospitals actually needed an alternative level of care in 2010 and were awaiting placement in a long-term care facility. Doubling the home care daily maximum to $200 to maximize the care for these people at home would save $750,000 per day per 3,000 Ontarians and would result in annual savings of $273.75 million in hospital costs that could be reallocated to home care.

Components in clinical programs across the range of determinants of health: Implications for achieving better care for Canadians

Components of effective and efficient clinical care programs have been identified, especially for the chronically ill. They include:

- working within a system where the amount of money spent on social services is higher than that spent on health services (The ratio of social service expenditures to health service expenditures is associated with better outcomes in key health indicators in countries belonging to the Organisation for Economic Co-operation and Development.)
- integrating nurse-led models of care with interdisciplinary teams that are based on an ecological understanding of the interplay among a myriad of personal and environmental factors determining patients' health (These complex interventions require a high-quality primary healthcare system and patient-centred care practices led by specially trained nurses or advanced practice nurses as well as adequate investments in social programs.)
- using nurse-led models of care (especially supplemental care models) that are proactive, comprehensive, coordinated and targeted, whether nurses are operating alone or as part of interdisciplinary teams that provide managerial continuity of care (This type of model entails a consistent and coherent approach from several professions to provide the agreed upon management of chronic, complex and changing patient needs.)
- telemonitoring solutions advocated by Canada Health Infoway, especially for remote populations
- implementing and using electronic health records

Recommended investments required for monitoring, evaluation, performance measurement and research

The monitoring, evaluation and performance measurement system should build on and link to pan-Canadian efforts already under way to establish *one* interprofessional healthcare monitoring and evaluation system. For example, the Vital Statistics Council of Canada, Statistics Canada, the Canadian Institute for Health Information and the Canadian Council of Cancer Registries have partnered together to form the Longitudinal Health and Administrative Data Initiative. This initiative will provide information about patients' conditions, status, use of computerized health and social services, and can be used for monitoring, evaluating performance measurement and conducting population health research.

Real world

Implementing these recommended models of nursing care for people with chronic illness could begin with continuing the discussions between the Canadian Nurses Association (CNA) and the Canadian Medical Association (CMA) that resulted in the July 2011 *Principles to Guide Health Care Transformation in Canada*. Integrating models of nursing care is an idea that aligns with CMA's recommendation to gain government support for CMA's proposed Charter for Patient-centred Care and other recommendations in its 2010 report *Health Care Transformation in Canada: Change That Works, Care That Lasts*. Specifically, CNA's recommended models of nursing care in this report align with CMA's call for government to:

- create national standards of continuing care provision
- provide support for informal caregivers and long-term care patients
- invest in recruitment and retention strategies for physicians, nurses and other healthcare workers

- examine partial activity-based funding for hospitals
- implement pay for performance to encourage quality of care and associated reductions in the use of hospital resources

In addition, CNA's recommendations about monitoring and evaluating performance are consistent with CMA's recommendation to require "public reporting on system performances and outcomes." However, there may be considerable disagreement between CNA and CMA on which indicators to measure and report, requiring ongoing deliberation and the inclusion of indicators recommended by both professional associations.