Evidence *in* Context

Issue: Age-Friendly Acute Care
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Health research — synthesized and contextualized for use in Newfoundland & Labrador

# Age-Friendly Acute Care in Newfoundland & Labrador

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Newfoundland & Labrador Centre for
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# About this Report

## About NLCAHR

The Newfoundland and Labrador Centre for Applied Health Research, established in 1999, contributes to the effectiveness of health and community services in Newfoundland and Labrador and to the physical, social, and psychological wellbeing of its population. NLCAHR accomplishes this mandate by building capacity in applied health research, supporting high-quality research, and fostering the effective use of research evidence by decision makers and policy makers in the provincial healthcare system.

## About the Contextualized Health Research Synthesis Program

In 2007, NLCAHR launched the Contextualized Health Research Synthesis Program (CHRSP) to provide research evidence that would help guide decision makers in the provincial health system on issues of pressing interest to Newfoundland and Labrador. Instead of conducting original research, CHRSP analyzes findings from high level research already conducted in the subject area, such as systematic reviews, meta-analyses and health technology assessments. Findings are then synthesized and subjected to a systematic process of contextualization: they are analyzed in terms of their applicability to the conditions and capacities of the unique context of Newfoundland and Labrador. Our contextual analysis includes assessing the specific forms an issue may take in this province as well as the applicability of any proposed solutions and methods to locally available resources, infrastructure, human resources, cultural conditions and financial capacities. CHRSP uses a combination of external experts and local networks to carry out and contextualize the research synthesis and to facilitate the uptake of the results by research users. CHRSP focuses on three types of projects: health services/ health policy projects, health technology assessment (HTA) projects, and projects that combine the two to examine processes for the organization or delivery of care involving a health technology.

## Who Should Read This Report?

This report provides a synthesis of the relevant research-based evidence on programs and services for older adults admitted as inpatients to acute care hospitals.

This report is intended to inform and assist decision makers in Newfoundland and Labrador's four Regional Health Authorities and its Department of Health and Community Services. The findings of our synthesis are specifically interpreted for the context of Newfoundland and Labrador.

Decision makers from other jurisdictions, especially those with similar potential clients, geography and resources, may also find the content helpful. The report includes explanations of research terms and technical language; as such, there is no need to have a specialized medical or health background in order to understand its content.

# The Research Team

## Age-Friendly Acute Care in Newfoundland & Labrador


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# Acronyms

| | |
|---|---|
| **ACE** | Acute Care for Elders |
| **ADL** | Activities of Daily Living |
| **ALC** | Alternative Level of Care |
| **AMSTAR** | Assessment of Multiple Systematic Reviews |
| **ARNNL** | Association of Registered Nurses of Newfoundland and Labrador |
| **CIHI** | Canadian Institute for Health Information |
| **CGA** | Comprehensive Geriatric Assessment |
| **CNA** | Canadian Nurses Association |
| **CHRSP** | Contextualized Health Research Synthesis Program |
| **DHCS** | Department of Health and Community Services (Government of Newfoundland and Labrador) |
| **ED** | Emergency Department |
| **HELP** | Hospital Elder Life Program |
| **HTA** | Health Technology Assessment |
| **IADL** | Instrumental Activities of Daily Living |
| **LAMC** | Leonard A. Miller Centre |
| **LOS** | Length of Stay |
| **MACE** | Mobile Acute Care for Elders |
| **MeSH** | Medical Subject Headings |
| **MUN** | Memorial University |
| **NICHE** | Nurses Improving Care for Health-System Elders |
| **NLCAHR** | Newfoundland and Labrador Centre for Applied Health Research |
| **NLCHI** | Newfoundland and Labrador Centre for Health Information |
| **OT** | Occupational Therapist |
| **PT** | Physiotherapist |
| **RHA** | Regional Health Authority |
| **RN** | Registered Nurse |

# Glossary

| | |
|---|---|
| **Advanced nursing practice** | An advanced level of clinical nursing practice that maximizes the use of graduate educational preparation, in-depth nursing knowledge and expertise. |
| **Ageism** | Discrimination or prejudice against older persons. |
| **Alternate level of care days** | The amount of time a patient remains in an acute care bed after the acute care phase of his/her treatment is complete. |
| **AMSTAR** | Assessment of Multiple Systematic Reviews: an 11-item instrument used to assess the methodological rigor of systematic reviews. |
| **Case management** | Any system for coordinating health and community services for patients: the case manager's role is to integrate care, monitor goals, and evaluate outcomes over a defined time period. |
| **Effect size** | A measure of the strength of a relationship between two variables (e.g., the relationship between a given treatment for a health condition and recovery from that health condition). Effect sizes may be quantified by a range of different measures, including correlations, differences in means, and relative risks. |
| **Geriatric syndromes** | Complex multifaceted clinically-related conditions that are not specific to a particular disease category: examples of geriatric syndromes include delirium, immobility, falls, urinary incontinence, and deconditioning. |
| **Hospitalist** | A hospital-based physician who assumes responsibility for managing an inpatient's hospital stay, in place of the inpatient's primary care doctor. |
| **Iatrogenic problems** | An illness or disorder induced in a patient as a result of hospitalization or treatment by a health professional. |
| **Older adult/senior** | A person who is 65 years of age or over. |
| **Primary research** | Research that involves the collection and analysis of data from actual participants, as opposed to the combination of such research (i.e., higher level studies) or secondary analyses of previously collected data. |
| **Randomized controlled trial** | A type of primary research where participants are randomized with regards to treatment, with the objective of balancing the impacts of confounding factors that may exist among the participants. |
| **Systematic review** | A literature review, focused on a specific and explicit research question that tries to identify, appraise, select and synthesize published and unpublished research evidence relevant to that question. |

# The Research Question

*"What programs and/or services are associated with improved outcomes for older adults admitted as inpatients to acute care hospitals?"*

# Key Messages from this Report

1. Models of care show promise when concentrated on self-contained units possessing specialized gerontological expertise and interdisciplinary knowledge, but there is less evidence in our synthesis to suggest that these models can be delivered successfully outside of such units.

2. Models of care delivered outside of specialized geriatric units require professional staff with enhanced training and skill sets, as well as careful reallocation of existing hospital resources.

3. Models of care are more successful when they incorporate a collaborative interprofessional team approach, though the literature provides little direction as to the most effective ways to configure such teams.

4. Geriatric assessment in its different variants is central to positive outcomes in inpatient hospital units by contributing to individual function and broader system outcomes such as shorter stays and fewer hospital readmissions.

5. Enhanced discharge planning contributes to positive patient satisfaction and quality of life, and reduces hospital resource utilization.

6. No single intervention demonstrated unqualified effectiveness across all settings, but there were some suggestions as to which intervention or program/service characteristics might produce positive effects for older patients in certain acute care settings.

7. Relational aspects of care delivery such as good communication among staff, older patients, and family members, and effective teamwork with minimal conflict and stress are important.

# Background

In March 2011, officials from the Central Health Authority in Newfoundland and Labrador asked the Contextualized Health Research Synthesis Program (CHRSP) to identify and evaluate the best available research-based evidence on age-friendly approaches to acute care. Their formal request described the issue as follows:

> *"What are the barriers faced by the aging population in our acute care facilities and what are the best practices for ensuring that we have an age-friendly acute care environment? Newfoundland and Labrador has an aging population. The first of the baby boomers turned 65 in 2011. We are challenged on a daily basis as we move forward to ensure age-friendly services in the acute care setting. There are tools to assess age-friendly communities[1] and a lot of work is ongoing in the province in this area. Are there tools to assess age friendliness in acute care environments and are there guiding principles? We need to start assessing this and need to develop strategies to reduce the barriers faced by an aging population. The research evidence on this topic would support our decision making on enhancements/ changes required in the acute care environments. There are existing barriers, and, through the research, these barriers would be identified and thus enable the health authority to establish priorities."*

Though this research topic was initially suggested by authorities at Central Health, consultations with the province's other Regional Health Authorities (RHAs) and with the Department of Health and Community Services (DHCS) revealed that the experience of older adults in hospital was a high-priority issue for them as well. CHRSP personnel then assembled a project team that included senior officials from within each of the four RHAs, a consultant from DHCS, a faculty member from Memorial University's School of Nursing with a background in acute care and gerontology, and a project coordinator internal to the CHRSP program.

Prior to the first full project team meeting, CHRSP conducted a preliminary search of the literature in consultation with Dr. Belinda Parke, Academic Team Leader on the project. We provided the full project team with an assessment of our preliminary literature searches and requested their feedback. We had three aims in mind for our first team meeting:

- to identify important clinical issues facing acute care providers in Newfoundland and Labrador;
- to affirm inclusion and exclusion criteria for our literature synthesis; and
- to clearly define the population and the acute care programs and services that would be included in the report.

At our meeting, the project team identified the prevention of functional decline as the most important

[1] One such tool is the World Health Organization's 2007 "Checklist of Essential Features of Age-friendly Cities," available from: http://www.who.int/ageing/projects/age_friendly_cities_network/en/index.html.

issue of concern to our report. Other relevant issues included: communication with seniors; understanding their experiences in hospital; inappropriate admissions; extended length of stay; poly-pharmacy and associated adverse events related to drug interactions; and end-of-life care and decision making around the use of medical interventions. As a result of the discussions, the research question became:

> *"What programs and/or services are associated with improved outcomes for older adults admitted as inpatients to acute care hospitals?"*

Moreover, we decided our focus would be on programs and service delivery in acute care hospital units that are *not* designed exclusively for adults aged 65 years and over (hereafter referred to as "older adults"). Since Newfoundland and Labrador currently has very little in the way of exclusively-designed, specialized geriatric units, and since it is not known whether the province will be funding such units in the short or medium term, we were particularly interested in finding out what works for older adults admitted to inpatient units designed for all adult-age groups. As a result, general medicine/surgical wards and emergency departments (EDs) were the two main settings examined in our synthesis, but units that deliver condition-specific care (e.g., stroke units, orthopedic units, psychiatric units, cardiovascular units, etc.) were also considered relevant because older adults represent a high proportion of the patient population in these units. In addition, programs and services delivered in diagnostic areas as part of an acute care episode were considered relevant. In contrast, we do not discuss any forms of rehabilitative or long-term inpatient care. Nor have we focused on specially-designed geriatric units such as Acute Care for Elders (ACE) units, except insofar as these units provide a control or comparison group for assessing the effects of programs and services delivered in all adult-age units. A more complete description of our inclusion criteria can be found in the web-based companion document to this report: www.nlcahr.mun.ca/chrsp.

*... we decided our focus would be on programs acute care hospital units that are not designed exclusively for adults aged 65 years and over...*

We provide an extended discussion of the limitations of this synthesis on pp. 29-30 of this report. However, we think it important to make a few brief observations about these limitations before proceeding further:

- The articles in our synthesis assessed a very heterogeneous array of models and interventions and there was little consistency in the methodology used to assess the effectiveness of these interventions.
- In many cases, these differences made it difficult to draw firm conclusions about what does or does not work, and *why* something does or does not work.
- In general, the reader should keep in mind that the findings presented in this report are based solely on the evidence identified through our literature searches, and that this body of evidence is characterized by significant gaps and limitations. These limitations are discussed in greater detail on pp. 29-30.

## Population Aging and Hospital Services

We begin this report by celebrating the fact that 2011 was the year the first baby boomers reached the age of 65, thus marking the beginning of a period when there will be a steadily increasing growth in Canada's older adult population. By 2031, all members of Canada's baby-boom generation will be at least 65 years old.(1)

Currently, older adults (65 and older) account for approximately 14% of Canada's population, but projections show that older people will "account for more than one-fifth of the population as soon as 2026 and could exceed one quarter of the population by 2056." (2) Statistics Canada reports that the fastest growing cohort group are those aged 80 years and over; they are projected to account for 3.3 million people by 2036, thereby quadrupling the number of centenarians living in Canada.

People are living longer than previous generations, and in many ways they are healthier than ever before. (3,4) However, with increasing age, chronic health conditions become more apparent; older adults are observed to utilize healthcare services more often because of the exacerbation of chronic diseases they live with, and not just because their age increases. (5,6)

When considering the various difficulties involved in healthcare service delivery, hospital care emerges as a particular challenge. This issue is punctuated in national debates over rising costs at a time when financial restraint and efficiency are highly valued. (7-9) A major contributing factor to these challenges is the number of older people with chronic health conditions; they constitute the greatest source of demand on inpatient hospital beds. (10)

## Hospital Structures and Processes

Hospitals are institutions organized and funded to provide biomedical care, surgical care, and diagnostic services. They have become key locations for solving complex medical and surgical problems.

People enter hospital in one of two ways: through the emergency department or through a pre-planned hospital admission. Once admitted as an inpatient for hospital care, each patient is further categorized according to the type of care required – medical or surgical. The focus on technology in hospitals reinforces "care of acute rather than chronic illnesses." (11)

However, many of the acute conditions seen in hospital relate to underlying chronic conditions. These conditions are not always overtly recognized as chronic-care cases by hospital staff trained to respond to acute illness. At the time of admission, an older patient's reason for coming to hospital – the chief complaint – is translated into a medical diagnosis around which all action, investigation, and treatment of symptoms will be coordinated. Moreover, the chronic health concerns of older adults in hospital can frequently present as 'functional crises' that are characterized by physical, cognitive, and social disability. Functional crises are often perceived as inappropriate conditions for treatment within an acute care setting; they do not 'fit' the mandate of the hospital, which is organized around responding to an acute illness with a technologically-dependent intervention.

Higher hospitalization rates have been noted among older adults with chronic health conditions. Canada-wide, the most-reported acute inpatient conditions for older adults between 2009 and 2010 are generally classified as:

- chronic pulmonary/respiratory,
- cardiac (heart failure, myocardial infarction), and
- orthopedic (hip and knee replacements). (1)

Older adults account for one-third of all acute care hospitalizations and almost 50% of all inpatient hospital days, compared with younger cohort groups. (10) Older adults, who tend to have more co-morbid chronic conditions, also tend to remain in hospital longer than younger people. Of all patients seen in the emergency department, for example, older people are more likely to be admitted for inpatient care. Approximately 8% of younger people become hospitalized as inpatients after a visit to the emergency department, as compared with 25% of older people. (1)

Older adults are a heterogeneous population, and age alone cannot account for hospital bed utilization. The impact of chronic health conditions and competing demands on hospital care providers to achieve prescribed efficiencies must also be taken into account. Older people receiving care in hospital, interdisciplinary team members providing inpatient care, and administrators organizing hospital services all play complex roles within the healthcare setting.

## Understanding Complexity in Relation to Outcomes

The complexity of addressing older adult inpatients' needs increases the risk that they will experience preventable adverse outcomes, which often contribute to functional loss and emerging frailty. Thomas and Brennan note that older adults:

> *"[o]ften do not present with typical signs and symptoms of disease, thus making timely and accurate diagnoses more difficult; they take more drugs than younger patients; and they have impaired physiological compensatory mechanisms and are therefore more likely to be harmed by errors in care"* (12, p. 743).

In the same vein, Baker, Norton, Flintoft et al. note that many adverse events occurring in hospital are preventable. (13)

Adverse outcomes and functional losses have a significant impact on independence, recovery from acute illness, and transition from the hospital back to the home. (14-16) Gill, Gahbauer, Han and Allore (2011) note that recovery from frailty is diminished with frequent hospitalization, which suggests that being in hospital is an independent risk factor for functional decline. (17) Others, such as Covinsky, Palmer, Fortinsky et al. and Sager, Franke, Inouye et al., suggest that a third of older adults who are hospitalized experience functional decline, and of these, about half do not fully recover from their loss. (18,19) In older patients, Wakefield and Holman suggest that functional loss may increase length of stay, hospital re-admission, the likelihood of placement in a nursing home, or mortality. (20)

It has long been accepted that the danger to older adults in hospital arises from traditional patterns of care that ignore normal physiological and social age-related changes (21) and promote the development of iatrogenic problems. (22) An iatrogenic problem can be understood as an illness or disorder induced in a patient as a result of hospitalization or treatment by a health professional. The cumulative effect of multiple and chronic medical problems, use of medications, existing cognitive impairments, failure to recognize delirium, and deconditioning creates vulnerability that places older adults at greater risk for iatrogenic problems, which typically appear as poor clinical and social outcomes. (23,24) Poor outcomes for older people in hospital can result from:

- failure to diagnose or treat a health problem that is difficult to uncover because of normal physiological age-related changes,
- incorrectly diagnosing or treating a health problem because the diagnostic features are masked by age-related consequences, or
- poorly managed chronic health problems like many of the geriatric syndromes.[2]

*"Often overlooked, geriatric syndromes are highly prevalent in older adults and their effects can contribute to disability and lower quality of life."*

Often overlooked, geriatric syndromes are highly prevalent in older adults and their effects can contribute to disability and lower quality of life. These syndromes can be challenging in a hospital setting because of underlying factors such as atypical presentation of disease and illness. (25,26) Thomas and Brennan (2000) remind us that unintended injury or complications may result in outcomes that include morbidity, disability at discharge, prolonged hospital stay, or death. Other clinical and social outcomes in older hospitalized adults reported in the literature include pressure ulcers, falls with accompanying fractures, functional decline, nursing home placement, and lowered social function. (13,21)

Research on hospitalization indicates that adverse outcomes in two domains of function - physical and cognitive - are tied to vulnerability in the older person, which is often associated with risk factors stemming from *being in hospital*. Seminal work by Inouye et al., (22) and Inouye & Charpentier (23) has identified five risk factors:

1. the use of physical restraints,
2. malnutrition,
3. the addition of more than three medications,
4. the use of bladder catheter, and
5. any iatrogenic event.

Older adult vulnerability is also associated with vision impairment, severe illness, cognitive impairment, dehydration, immobility, deconditioning, and advanced age. (18,20,23,27,28) Functional decline is known to increase with a corresponding increase in the number of risk factors, "suggesting that the predisposition to functional decline may result from the cumulative effects of multiple impairments." (23, p. 650)

[2] "Geriatric syndrome" is a gerontology term that refers to complex multifaceted clinically related conditions that are not specific to a particular disease category. They include: cognition problems (such as delirium), mobility issues, falls, urinary incontinence, and deconditioning.

Iatrogenic problems can also result from both the actions of hospital employees and the influence of hospital systems and care processes. (13,29) The current system of care generally ignores broader factors that have an impact on outcomes for older patients, such as speed of recovery, the consequences of deconditioning, iatrogenic response to acute interventions, atypical presentation of disease and illness, the consequences of limited social support, and the ambience of the built physical environment. Although the literature points to many concerns about the negative experience of older people within the hospital environment, (29) the best programmatic or service response to these concerns remains elusive.

Given current demographic imperatives and increasing pressures on the healthcare system, hospital administrators and interdisciplinary clinicians are indicating both a need and a readiness to adopt hospital systems and care approaches that will be friendlier to older adults. Given this background, the CHRSP Project Team set out to critically assess the existing evidence on acute care programs and outcomes using a social ecological view of aging, chronicity, and health care services.

## Ecological Perspective

Ecological thinking involves a wider view of hospitalization. To fully understand the contribution of existing evidence on acute care programs and services, an ecological perspective demands that we not only consider hospital systems and processes, but that we also consider the people who engage with these systems and processes. This requires us to account for the special features that older people and their families bring to the health care setting, as well as the contribution of hospital interdisciplinary teams working in systems of care that influence, and are influenced by, other aspects of the health care system. Rather than focusing exclusively on older individuals in their immediate social and physical environment, this perspective permits an exploration of relationships beyond the micro level and into larger healthcare systems. As well, it permits exploration of more complex phenomena, such as evolving economic and political change and social arrangements. Therefore, in examining the research evidence, it is imperative for us to consider the hospital as part of a larger provincial and federal health system, a system that must be taken into account when considering what the evidence tells us about hospital programs and services for older people.

*"To fully understand the contribution of existing evidence on acute care programs and services, an ecological perspective demands that we not only consider hospital systems and processes, but that we also consider the people who engage with these systems and processes."*

# Synthesis of the Evidence

We synthesized evidence from eleven systematic reviews published between September 2006 and September 2011, and three primary studies published between April and September 2011[3] in order to identify acute care programs and services that demonstrate effective measureable outcomes. While a complete description of our inclusion criteria, search strategy, article selection, data extraction procedures, and critical appraisal of included articles is contained in the web-based companion document (www.nlcahr.mun.ca/chrsp), we note here that the primary research base covered by our synthesis encompasses 163 different primary studies. A certain number of these studies appeared in more than one review (see Table 1 below). As mentioned earlier, these studies varied widely in terms of the questions they sought to answer, methodological approaches, interventions, and outcomes.

| | Primary studies that appeared in: | | | | |
|---|---|---|---|---|---|
| | **5 reviews** | **4 reviews** | **3 reviews** | **2 reviews** | **1 review** |
| **Number of primary studies** | 3<br>Caplan, 2004 (30)<br>Counsell, 2000 (31)<br>Landefeld, 1995 (32) | 2<br>Asplund, 2000 (33)<br>Mion, 2003 (34) | 7<br>Basic, 2005 (35)<br>McInnes, 1999 (36)<br>Naylor, 1999 (37)<br>Nikolaus, 1999 (38)<br>Reuben, 1995 (39)<br>Runciman, 1996 (40)<br>Winograd, 1993 (41) | 20 | 128 |

Table 1: Summary of the appearance of primary studies in the reviews synthesized in this report

Our critical appraisal methodology for systematic reviews employed the Assessment of Multiple Systematic Reviews (AMSTAR), a validated measurement tool for evaluating the methodological quality of systematic reviews. (42) AMSTAR scores range from 0 to 10 (0 to 11 for reviews that pool quantitative data). A higher AMSTAR score can be taken as an indicator that the various stages of the review (e.g., literature searching, pooling of data, critical appraisal, etc.) were conducted appropriately. A low AMSTAR score does not necessarily mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review must be examined closely to identify its limitations. In Table 2 below, we provide the AMSTAR scores for the reviews included in the synthesis.

[3] Studies published within this date range were too recent to have been included within a systematic review.

| Review | AMSTAR Score |
|---|---|
| Crotty et al. (2010)(43) | 9/11 (82%) |
| de Morton et al. (2007)(44) | 9/11 (82%) |
| Ellis et al. (2011)(45) | 8/11 (73%) |
| Conroy et al. (2011)(46) | 7/11 (64%) |
| Fealy et al. (2009)(47) | 5/10 (50%) |
| Linertova et al. (2010)(48) | 5/10 (50%) |
| Bridges et al. (2010)(49) | 4/10 (40%) |
| Sinha et al. (2011)(50) | 4/10 (40%) |
| Steele (2010)(51) | 4/10 (40%) |
| Hickman et al. (2007)(52) | 3/10 (30%) |
| Preyde et al. (2009)(53) | 3/11 (27%) |

Table 2: AMSTAR scores for cited systematic reviews synthesized in this report

## Thematic Analysis

As a first step, a thematic analysis was conducted to identify key themes that were present across the selected articles. For ease of discussion, we have organized our synthesis according to the following three main themes:

- models of care and resources,
- hospital interventions, and
- older patients' experiences of being in hospital

It should be noted that there is some overlap between these themes. Table 3 identifies the major themes, their corresponding citations, and study settings.

In an effort to assist the reader in understanding the topics and to indicate the range of inpatient units covered, the first column in Table 3 provides an at-a-glance breakdown of the topics relevant to each major theme. The reader should note that not all inpatient hospital units are represented in this report. After careful consideration of the contents of the systematic reviews and primary studies, we integrated the discussion of assessment and triage and the discussion of discharge planning into the section on models of care and resources. As well, in the discussion that follows, we pay close attention to the particular outcome measures employed by each included article.

| Thematic Content | Citation | Type of hospital unit |
|---|---|---|
| Models of Care and Resources | | |
| Case management models | Sinha et al. (2011) | Emergency department |
| ACE, HELP, NICHE | Steele (2010) | Various inpatient units |
| Nurse staffing levels | Schilling et al. (2012)(54) (primary study) | Multiple acute care hospitals – units not specified |
| Hospitalist-ACE Service | Wald et al. (2011)(55) (primary study) | Medical unit |
| MACE | Farber et al. (2011)(56) (primary study) | Various inpatient units |
| Hospital Interventions | | |
| Physical and psychosocial | Crotty et al. (2010) | Orthopedic units |
| Exercise | de Morton et al. (2007) | Medical units |
| Interventions to reduce risk of readmission | Linertova et al. (2010) | Medical units |
| General interventions for management of older patients | Hickman et al. (2007) | Various general medical/surgical units, emergency departments, and condition-specific units |
| Assessment and Triage | | |
| Comprehensive Geriatric Assessment | Conroy et al. (2011);<br><br>Ellis et al. (2011) | Conroy et al. (2011): EDs and geriatric services<br><br>Ellis et al. (2011): various inpatient units |
| Gerontology nursing assessment | Fealy et al. (2009) | Emergency department |
| Older Adults and Family Experiences | | |
| | Bridges (2010) | Various general medical/surgical units, emergency departments, and condition-specific units |
| Discharge Planning | | |
| | Preyde et al. (2009) | Emergency departments, condition-specific units, and various inpatient units |

Table 3: Thematic content from systematic reviews and primary studies

## Models of Care and Resources

Hospital systems in Canada generally take a 'one-size-fits-all' approach for all adult patients. In some cases, hospitals offer specialized geriatric services to address the complex needs of older adults. At present, models of specialized geriatric service exist in many urban center hospitals. Our attention in this synthesis includes programs and services that *are not designed exclusively for older adults*. As mentioned earlier, however, a number of our included articles use specialized geriatric units as a control or comparison group in order to assess the effects of services delivered in *adult-age* units. ACE units, in particular, are considered the gold standard for elder-friendly hospital care, and they provide a natural frame of reference when evaluating the effectiveness of new and untested programs and services. For this reason, ACE units and the like are not completely ignored in this analysis, but they are not the essential focus.

We define "models of care" and "resources" as in-hospital programs and services that aim to improve care and resolve issues experienced by older people by targeting specialized geriatric resources to adult-aged units. The models we examined generally focussed on improving acute care for older people (usually $\geq 65$) by reducing iatrogenic problems, preserving functional and cognitive abilities, and preventing the occurrence of geriatric syndromes. The assumption that underpinned the reviews associated with models of care suggests that if the right care is provided for the right problem, harm is reduced. If harm is reduced, and functional and cognitive disabilities are prevented, older people will return home safely and independently. In many ways, these programs and services can be considered *system interventions* similar to those traditionally understood in the industry as *individual patient or clinical- specific interventions*.

In our synthesis of the evidence, two systematic reviews – Sinha et al. and Steele – and two primary studies – Farber et al. and Wald et al. – examined particular models of care. (49, 50, 54, 55) Four other reviews focused on a particular component of care models: Ellis et al., Conroy et al., and Fealy et al. evaluated different forms of geriatric assessment, while Preyde et al. reviewed studies on discharge planning. (44-46, 52) With the exception of Nurses Improving Care for Health-System Elders (NICHE), all models of care encountered in our synthesis focused on care improvements for older individuals (NICHE could be considered a *system intervention* insofar as its aims were to change hospital values, promote evidence-informed practices, and enhance acute care nurses' clinical knowledge of gerontology). Review findings are drawn from numerous study designs, for example, randomized control trials, non-randomized clinical trials, observational studies, retrospective cohort studies, surveys, and program descriptions.

Numerous measurable outcomes were employed to assess the following approaches: ED case management, the Hospital Elder Life Program (HELP), NICHE, ACE units, a mobile ACE service, and a hospitalist-run ACE service. When we considered the type of outcomes used to measure the success of models of care for older people, we found twelve separate examples used across the systematic reviews (see Table 9 in Appendix A). Of the twelve identified outcomes, functional outcome was represented the most frequently with six citations.

Clearly, preserving functional ability was a key feature of the models of care identified in the systematic reviews. Function as a measured outcome was evaluated using a variety of clinical tools, such as the Timed Up and Go Test, (57) the Barthel Index, (58) the Klein-Bell Activities of Daily Living (ADL) Scale, (59) and the Mini Mental Status Examination, (60) to name a few. In general, we found little consistency across reviews in the outcomes employed and the way these outcomes were measured.

***Key Message #1:*** **Models of care show promise when concentrated on self-contained units possessing specialized gerontological expertise and interdisciplinary knowledge, but there is less evidence in our synthesis to suggest that these models can be delivered successfully outside of such units.**

One of our highest-rated reviews, Ellis et al., evaluated the effectiveness of Comprehensive Geriatric Assessment in hospital for older adults admitted as an emergency. (44) This Cochrane review of 22 primary studies defined CGA as a "multidimensional, interdisciplinary diagnostic process to determine the medical, psychological and functional capabilities of a frail elderly person in order to develop a co-ordinated and integrated plan for treatment and long-term follow up" (p. 1). These authors thus tend to regard CGA as a specific intervention, but in many ways it could also be considered a model of care. This issue of how to classify CGA is explored more fully below, in the section on hospital interventions, but it will suffice to note here that in this section we are considering CGA as model of care. The objective of the review by Ellis et al. was to determine whether or not specialist, organized, and coordinated geriatric care – as exemplified by CGA – was superior to conventional hospital care. The authors discerned clear improvement in the odds of a patient being alive and in his/her own home if they received CGA; however, they noted that this effect was demonstrated consistently only by trials of dedicated geriatric wards, not by trials of mobile geriatric consultation teams that visited patients on general wards. The authors offer several possible reasons why this might be the case. In the first place, a dedicated ward that maintains an exclusive focus on meeting older patients' unique needs might provide greater opportunities for learning and skill-building. Teams that migrate from unit to unit may not be able to exercise much influence over the behaviour of other health professionals involved in patients' care, and so their treatment recommendations may not always be carried through. It might be that protocols for the management of key conditions are more readily implemented and followed in geriatric wards. A dedicated ward area can enact its own recommendations with respect to goal setting and discharge planning, and these activities might be better coordinated as a result. Finally, a customized ward environment might offer greater opportunities for reducing the risk of delirium and promoting mobility and independence.

Some of the other articles in our synthesis provided compelling indications that care may be more effective when delivered in specialized geriatric units, and we will examine these in the section on hospital interventions. On the other hand, the articles were not unanimous on this question. For instance, Steele (2010) found that patients in HELP, a mobile outreach program, have decreased

incidence of delirium, cognitive impairment, sleep deprivation, and use of sedatives.[4] (50) HELP is designed to prevent deconditioning, maximize independence, and ensure successful transitions from hospital to home, and it can be implemented in any pre-existing hospital environment. In HELP, older patients are screened for risk factors of functional decline and delirium, and special protocols for preventing and managing these conditions are implemented whenever a patient is found to be at risk. Depending on the patient's particular set of needs, protocols may include a daily visitor program, therapeutic activities program, early mobilization program, non-pharmacologic sleep protocol, hearing and vision protocol, geriatric interdisciplinary care, and/or links with community services. HELP uses an interdisciplinary team of volunteers and professionals, including an elder-life nurse specialist, elder-life specialist, geriatrician, program director, and interdisciplinary support staff as needed (including a chaplain, pharmacist, dietician, rehabilitation therapists, discharge planner, social worker, and psychiatric liaison nurse). In addition to the improved clinical outcomes noted above, patients report a high level of satisfaction with HELP. The search performed by Steele was not as comprehensive as some of the other reviews in our synthesis, and there were some notable gaps in her reporting of methods, but her careful attention to included study quality lends credence to her conclusions.

Finally, we found two recently published primary studies that assessed the effectiveness of modified versions of the ACE unit model. These studies were published too recently to have been included in a systematic review. As Wald et al. note, dissemination of the ACE unit model has been limited by the upfront resources required to create and maintain a modified, dedicated unit. (54) These authors conducted a quasi-randomized controlled trial in order to evaluate a hospitalist-run Acute Care for Elders (Hospitalist-ACE) service at the University of Colorado Hospital. As they describe it, Hospitalist-ACE is a hybrid of a general medical service and an inpatient geriatrics unit, and is staffed with a core group of hospitalists. The Hospitalist-ACE unit was similar to other medical/surgical units and the intervention did not require any modifications to the rooms, equipment, or common areas. Furthermore, the nursing staff on this unit had no formal geriatric nursing training. After comparing the group of 122 patients who received treatment on the Hospitalist-ACE unit with 95 usual care patients, the authors discerned no difference between Hospitalist-ACE and control patients in key clinical outcomes such as falls, physical restraint use, and readmissions. The two groups were also similar in terms of mean LOS, costs, and 30-day readmission rates. On the other hand, the authors did find that there was significantly greater recognition of abnormal functional and cognitive status in the Hospitalist-ACE group, as well as greater use of "Do Not Attempt Resuscitation Orders."

Similarly, Farber et al. conducted a retrospective cohort study of 8,094 hospitalized adults in order to compare a mobile ACE (MACE) service to a traditional unit-based ACE service and matched controls. (55) The MACE service was designed to bring an interdisciplinary, patient-centered team approach to hospitalized older adult patients admitted throughout the hospital. Individual MACE teams were composed of a geriatrician-hospitalist, geriatric medicine fellow, social worker, and nurse coordinator.

[4] It should perhaps be noted, however, that Steele's (50) conclusions about HELP are based on five studies co-authored by the program developer, Sharon K. Inouye of Harvard Medical School. According to Steele "*The available evidence on the HELP program is generally high quality. There are multiple rigorous studies with large sample sizes, which reflect an ability to detect differences in outcomes*" (p. 337).

Key components of the service included: care coordination with the outpatient practice, early family meetings, discharge planning, patient and caregiver education, and post-discharge follow-up phone calls.

They found that mean LOS and total cost were significantly lower for patients in the MACE service compared with the ACE unit service, and there were no differences in in-hospital mortality and 7- and 30-day readmission rates. However, the authors do note that the study took place in a large academic medical center in New York City, and therefore "[w]hile the MACE model may very well be readily adaptable elsewhere, numerous studies have demonstrated wide variation in medical practice patterns and health care use which may influence the exportability of the model" (p. 362).

Taken together, the articles by Steele, Farber et al., and Wald et al. offer some limited indication that certain kinds of programming might be effective outside specialized geriatric units. (50, 54, 55) However, there is comparatively greater evidence in our synthesis for the effectiveness of programs and services delivered in specialized geriatric environments like the ACE unit.

***Key Message #2*: Models of care delivered outside of specialized geriatric units require professional staff with enhanced training and skill sets, as well as careful reallocation of existing hospital resources.**

As noted previously, our synthesis provides some indication that effective care for older patients can be delivered even in the absence of costly capital investments in specialized unit design. However, the models that were designed to work outside of specialized geriatric units invariably employed a body of providers with enhanced geriatric training and skill sets. As indicated above, HELP teams are led by a core group of specialists trained in gerontology, including a geriatrician, elder-life nurse specialist, and elder-life specialist. Many of the individual components of the HELP model – such as assisting with ambulation and providing socialization – are delivered by volunteers who must undergo a rigorous hospital training program. Steele et al. further found that successful implementation of HELP required experienced clinician leaders to champion the program. (50)

The primary studies conducted by Farber et al. and Wald et al. also suggest ways of reallocating – as opposed to augmenting – existing hospital resources so as to improve care for older patients. (54,55) In both cases, however, these results were achieved by employing professional staff equipped with enhanced education and training. By the second year of operation, the MACE service devised by Farber et al. had achieved net savings of $2,872 in total costs per hospitalization when compared to the ACE unit-based service, and net savings of $4,943 when compared to the control cohort patients receiving general medical services.

The only relevant costs associated with MACE were the salary and benefits of the nurse coordinator, which, according to the authors, did not meaningfully offset the aforementioned savings. The team

social worker, whose salary line was already paid for by the hospital, represented a reallocation of existing hospital resources and not an addition. However, it must be noted that patients in the MACE service were cared for by fellowship-trained geriatricians who had been in practice for at least a year.

Likewise, Wald et al. found that their hospitalist-led ACE-style service yielded significant improvements in care for older persons while maintaining a level of resource use that was comparable to usual care. (54) As described above, Hospitalist-ACE made use of existing staff and settings within the hospital, without any special modifications. This illustrates how resources can be reallocated to reinvent how business is conducted in hospitals without compromising patient care or dramatically increasing resource utilization. But once again, the key figures in this model – the hospitalist attendings – had, at minimum, attended an intensive mini-course in inpatient geriatrics. In addition, a geriatric-focussed educational curriculum was designed for the medical residents and medical students on the Hospitalist-ACE unit team. The curriculum encompassed twelve separate modules: delirium, falls, dementia, pressure ulcers, physiology of aging, movement disorders, medication safety, end of life care, advance directives, care transitions, financing of health care for the elderly, and ethical conundrums in the care of the elderly. Formal instruction of 30-45 minutes duration occurred three to four days a week and was presented in addition to routine internal medicine educational conferences.

***Key Message #3:*** **Models of care are more successful when they incorporate a collaborative interprofessional team approach, though the literature provides little direction as to the most effective ways to configure such teams.**

A number of our included articles emphasized that specially trained interdisciplinary or interprofessional teams constitute one of the essential components of high-quality, knowledgeable care for older people in hospital. The Cochrane review by Ellis et al. highlighted the importance of multidisciplinary teams in the delivery of effective geriatric care, though as mentioned these authors found that better outcomes were demonstrated consistently only by teams that operated in specialized geriatric wards. (44) They suggest that specialization is critical to successful multidisciplinary team outcomes, and they draw particular attention to the combination of medical, physiotherapy, and occupational therapy expertise. Sinha et al. identified interprofessional work practices as an integral component of effective case management models for older ED patients. (49) As discussed in the review by Steele, the HELP program is delivered by an interprofessional team of volunteers and health care providers, and each member of this team has a specific role to play in decreasing patients' risk factors. (50) One of the central findings in the review by Hickman et al. was that a team approach "either directly in a designated unit for older patients or indirectly using gerontological expertise in a consultancy model" is "critical in providing optimal health outcomes for older people admitted to acute care" (51, p. 113). However, notwithstanding this clear emphasis on the importance of interdisciplinary and interprofessional teams, the literature in our synthesis provides little direction as to the most effective configuration for such

teams. The interdisciplinary roles identified most frequently in our articles include physiotherapists, occupational therapists, advance practice nurses trained in gerontology, social workers, hospitalists, geriatricians, pharmacists, dieticians, and recreational therapists. Generally speaking, then, the term "interdisciplinary team" denoted a combination of some or all of the above roles. Unfortunately, there are very few other general observations we can make that are supported by multiple articles.

On the other hand, there were a number of promising suggestions that appeared in only one or two articles. Farber et al. and Wald et al., for example, both argue that teams led by hospitalists equipped with enhanced geriatric training and knowledge can deliver effective ACE-style services outside of ACE units. (54,55) Sinha et al. provide some extended commentary on the role nurses play in ED-based geriatric case management models. (49) These authors contend that nurses possess the kind of broad-based skill sets – spanning both health and social care – that make them natural team leaders when it comes to implementing the complex and often interrelated health and social interventions required for effective geriatric case management. Such interventions require an intimate understanding of emergency care, disease processes, Medicare regulations, and available community resources. Comparing nursing-led interventions with social work-led interventions, they suggest that "without appropriate nursing support, social workers in general did not have the broader skill set required to work as case managers within the ED" (p. 680). They recommend employing geriatric emergency management nurses as full staff members on multidisciplinary ED teams as a means of encouraging greater commitment to geriatric care principles in this setting. This review did contain a few notable methodological deficiencies: failure to employ at least two independent data extractors; failure to search for articles in languages other than English; failure to assess for publication bias; and some gaps in the reporting of methods. Overall, however, the transparency and comprehensiveness of the authors' search procedures and their exclusion of studies that did not satisfy Cochrane evaluation criteria both suggest that their findings merit careful consideration.

Above all, the literature in our synthesis indicates that building effective teams involves more than just assigning responsibility for patient care to a group of professionals, and ensuring that the group has the right mix of skills and expertise. Additionally – and perhaps more importantly – it requires that team members confer actively with one another, involve one another in their clinical decision-making, and work toward shared patient care goals. Ellis et al. speculate that one of the reasons why geriatric wards appear to be so effective is that they afford team members the opportunity to work in close proximity with one another, which "allows more efficient and effective multidisciplinary working and team-building". (44, p. 14) Linertova et al. likewise assert that complex geriatric management initiatives require intensive collaboration and communication between caregivers both within and outside of the acute care setting. (47) Farber et al. suggest that the LOS reductions associated with the MACE team model may be attributable in part to the daily and sometimes twice daily meetings held by team members, which enabled more timely execution of the discharge process. (55) Sinha et al. go so far as to suggest that collaborative working practices may be *the* most integral element of effective ED-based geriatric case management; such practices are, in their view, "critical in model implementation and rely on the interpersonal skill sets of the clinicians delivering those initiatives and their ability to earn the trust and respect of their colleagues within and beyond the ED" (49, p. 680).

***Key Message #4:*** **Geriatric assessment in its different variants is central to positive outcomes in inpatient hospital units by contributing to individual function and broader system outcomes such as shorter stays and fewer hospital readmissions.**

Assessment and triage are standard practice in geriatric models of care although they may be configured with different multidisciplinary resources. They comprise a range of approaches from rapid, narrowly-focused procedures such as high-risk screening to more in-depth and time-consuming assessments such as CGA. Three reviews in our synthesis focused specifically on assessment and triage in acute care settings. Conroy et al. and Ellis et al. examined Comprehensive Geriatric Assessment (CGA) in particular while Fealy et al. appraised the evidence concerning the effectiveness of various gerontology nursing assessment and referral interventions deployed from the ED. (44-46) Additionally, geriatric assessment was a major focus in the reviews by Sinha et al. and Hickman et al. (49, 51) When comparing across reviews, we found inconsistent approaches to what was assessed, who conducted the assessment, and outcome measures used. Overall, however, the evidence in our synthesis suggests that effective care for older adult patients must involve some kind of clinical assessment procedure that takes account of the unique medical, social, functional, and psychological needs of this high-risk group. The paradigmatic example of such a procedure is CGA. Though various models of CGA have evolved in different health care settings to meet differing needs, Ellis et al. identify four main components that are common to all models:

- coordinated multidisciplinary assessment;
- geriatric medicine expertise;
- identification of medical, physical, social, and psychological problems; and
- the formation of a plan of care including appropriate rehabilitation (p. 2).

Of the articles in our synthesis that directly addressed the issue of assessment, the Cochrane review by Ellis et al. received the highest AMSTAR score. (44) These authors found robust evidence that inpatients in dedicated geriatric wards are more likely to survive and return home if they receive CGA; though – as we have stated – this effect was not clearly demonstrated where patients remained in a general ward and received assessment from a visiting specialist multidisciplinary team. Conroy et al. also assessed CGA, though these authors focused more narrowly on hospitalized acute care patients who were ultimately discharged within 72 hours. (45) These authors found "no firm evidence that any form of CGA in this setting and to this group has any effect on mortality, long-term institutionalisation, subsequent use of acute care, physical function, quality-of-life or cognition" (p. 442). Significantly, Conroy et al. did not review any trials of dedicated geriatric inpatient units. When considered together, the findings by Ellis et al. and Conroy et al. suggest that the clinical setting in which CGA is delivered may be one of the primary determinants of its effectiveness. Hickman et al. likewise observe that:

> *"Identifying risk factors through appropriate methods and suitable interventions facilitates appropriate care interventions. Some of the interventions and risk*

> *assessment screening tools have proven to be effective in improving a patient's outcomes; in particular, interventions within gerontology units specifically designed to meet the needs of older patients appear to be more effective than interventions within usual care*" (51, p. 123).

In a similar vein, the review by Fealy et al. provides carefully qualified support for the effectiveness of gerontological nursing assessments for older ED attendees. (46) Overall, these authors conclude that assessment and referral interventions demonstrate effectiveness in reducing service use and improving physical function; however, they also note that "a number of trials have failed to demonstrate effectiveness in predicted patient and/or health care systems outcomes, and in some instances have also identified increased service use" (p. 943). The explanation for this somewhat paradoxical finding is that assessment interventions frequently highlight previously undiagnosed health problems that lead to further service use. Nonetheless, they suggest that a preliminary pre-discharge risk assessment in the ED should be a routine prelude to post-discharge CGA and referral. The analysis in Sinha et al. would seem to corroborate this finding. (49) These authors find that effective ED-based geriatric case management models employ validated risk stratification tools and "more focused as opposed to the more time-intensive and detailed comprehensive geriatric assessment that outpatient or hospital inpatient-based geriatricians usually perform" (p. 678). It should be noted here that there was a very high degree of overlap in the included studies covered by these two reviews; all eleven of the studies in Fealy et al. also appeared in Sinha et al.

***Key Message #5:*** **Enhanced discharge planning contributes to positive patient satisfaction and quality of life, and reduces hospital resource utilization.**

The final item we consider in this section is discharge planning. Enhanced discharge planning can include: liaison and post discharge referrals, follow-up of high risk patients, a post discharge health visitor, and/or a nurse discharge plan coordinator, among other possible elements.

Farber et al. further suggest that discharge planners can use family meetings to try and mitigate complex family/living situations early in hospitalization. (55) This observation addresses a significant gap in the literature we reviewed; multiple articles discussed the importance of discharge planning, but the mention of family as part of the team is generally lacking. We identified only one systematic review that focused specifically on discharge planning: Preyde et al. (52) Regrettably, this was the lowest-scoring review in our synthesis, so its findings must be interpreted with caution. Nevertheless, the authors critically appraised each and every included study and found no significant relation between effect size and quality assessment rating, so we feel that these findings merit serious consideration. In this review, all 25 included studies tested interventions that included some degree of multidisciplinary involvement, often coordinated by a single discharge planner. In thirteen studies, a follow-up telephone call or home visit was made by a hospital staff person. In several studies, the interventional approach was similar to CGA or involved some form of early access to geriatric assessment. Preyde et al. concluded that

"augmented discharge planning appears to have a robust effect on patient satisfaction and moderate effects on quality of life and hospital resources," though they noted no strong effects for any one particular type of discharge planning (p. 212). As noted earlier, Sinha et al. arrived at a similar conclusion with respect to geriatric case management in the ED. (49) Preyde et al. also emphasize the strong positive effect of thorough discharge planning on patient satisfaction. Their discussion of this outcome is worth quoting in full:

> *"Sometimes complaints to hospital personnel concern the lack of follow-up in the home. Most importantly, patients' perceptions of quality of care are important to their well-being, and second, listening to and addressing complaints can be time consuming for all hospital staff. A minimal amount of follow-up – for example, a phone call within two days – may be important to arrange for home care if needed or to give the patient an opportunity to voice concerns but also to give the patient a sense of being cared for or nurtured. Conversely, when discharge planning does not include follow-up, the discharge planner may be left wondering how their vulnerable patients manage post-discharge. The satisfaction of the discharge planner may also be enhanced with follow-up contact post-discharge*" (p. 212).

Since we have not systematically reviewed the literature on post-acute home care, we cannot draw any conclusions about its effectiveness, much less identify the more promising forms of this type of intervention. Generally speaking, however, to the extent that the literature in our synthesis compared care models that included a home care component with ones that didn't, the former appeared to generate the more favourable results. For example, Linertova et al. compared a group of seventeen studies on in-hospital geriatric evaluation and discharge management with a group of fifteen studies on interventions that involved some type of post-discharge home care. (47) Overall, only ten of the studies reported a statistically significant difference between intervention and control groups in terms of reduced readmissions, but seven of these ten included some type of home care during the follow-up period. According to the authors, "[t]his evidence suggests that interventions that incorporate geriatric management supported with home care post discharge are more likely to reduce or prevent hospital readmissions in elderly patients" (pp. 5-6). Sinha et al. identified post-ED discharge follow-up as one of the core components of effective case management models for older patients. (49) Fealy et al. likewise suggest that:

> *"The benefits of a screening assessment and referral intervention appear to derive from early provision of home care rather than early contact with the primary physician (McCusker et al. 2003a). Thus, effectiveness may also be a function of establishing continuity of home-based care rather than prompting further medical intervention"* (46, p. 942).

In sum, our synthesis has identified three essential components of effective care models for older adults admitted as inpatients to acute care hospitals:

1. an interdisciplinary team approach to delivery of care;

2. clinical assessment procedures that take account of the older patient's unique medical, social, functional, and psychological needs; and
3. enhanced discharge planning.

Additionally, the evidence in our synthesis suggests two other factors that may increase the probability that such care will yield positive patient and system-level outcomes:

- delivery of care within gerontology units specifically designed to meet the needs of older patients, and
- care planning that encompasses follow-up home care.

## Hospital Interventions for Older People

Considered together, the eleven reviews and three primary studies in our synthesis examine a range of specific hospital interventions, some of which we have touched on already. These interventions include:

- reorientation methods for hip fracture patients;
- intensive occupational therapy for hip fracture patients;
- cognitive behavioral therapy for hip fracture patients;
- physical activity to prevent deconditioning;
- RN staffing practices;
- programmatic or multidisciplinary interventions;
- CGA;
- discharge referrals, phone follow-up, and coordination of care;
- education (patient or staff); and
- high-risk screening, case finding, or case management.

The most frequent intervention was categorized as *programmatic or multidisciplinary intervention*. Programmatic or multidisciplinary intervention is defined as a multidimensional process that includes assessment, and an identification of problem with a corresponding response to improve different aspects of an older person's functional capacity (i.e., cognitive, physical, psycho-social and medical). In many ways, this could also be considered a model of care. For example, CGA and case finding/ management are noted as programmatic multidisciplinary interventions but could also be considered as examples of models of care as noted above. This illustrates how CGA is both a model of care and an intervention to improve function.

Generally speaking, interventions were targeted either toward clinical problems experienced by older hospitalized individuals, or toward system-wide improvements. In a number of reviews, although the interventions were interdisciplinary in nature, they were targeting a specific type of problem. For example, four reviews evaluated the effectiveness of single interventions. Crotty et al. examined interventions for improving physical and psychosocial functioning post hip fracture. (42) De Morton et al. evaluated the effect of exercise on functional status, adverse events and hospital outcomes in acutely-ill medical patients. (43) Two other reviews focussed on system concerns as opposed to individual clinical problems; Linertova et al. addressed interventions for reducing risk of readmission to

hospital, and Hickman et al. examined experimental literature on interventions to manage older people in acute care in order to inform development of a care practice model. (47, 51)

The heterogeneity in the outcome measures employed by the reviews provides varied conclusions and implications for hospital practice interventions (for a full list of outcomes see Table 9 in Appendix A). Patient-level outcome measures for older individuals included: quality of life, patient satisfaction, cognition, delirium, functional outcomes, mortality, falls, and musculoskeletal injuries. Broader system outcomes included: admission, visit or readmission to hospital, length of stay, costs, and discharge home or to an institution. Functional outcomes were classified as either:

a) Activities of Daily Living (ADL) like dressing, or personal hygiene like bathing, or
b) Instrumental Activities of Daily Living (IADL) like grocery shopping or banking.

Service/resource utilization outcomes include: hospital readmissions, institutionalization (or, conversely, the patient's odds of remaining in his/her own home), costs, LOS, and discharge destination (home or institution). The majority of reviews in our synthesis employ both patient and service/resource utilization outcomes. The choice of outcome measure is best determined by matching individual and hospital system need; both levels of outcome are required to be fully comprehensive and ensure strategic directions meet quality improvement targets in inpatient hospital care for acutely-ill older people. Sinha et al., for example, propose a set of thirteen core indicators – including both patient and service/resource utilization outcomes – for use in evaluating, monitoring, and refining ED-based case management procedures:

1. hospital admission rate;
2. number of hospital admissions avoided;
3. length of inpatient stays;
4. ED re-visitation rate;
5. subsequent hospital admission rate;
6. nursing home admission rates;
7. patient satisfaction with service;
8. patient adherence to follow-up appointments;
9. ADL, IADL functional decline rates;
10. patient's perceived well-being/quality of life;
11. home caregiver satisfaction with service;
12. ED and hospital care providers' satisfaction with service; and
13. primary care and community service providers' satisfaction with service. (49)

***Key message #6:*** **No single intervention demonstrated unqualified effectiveness across all settings, but there were some suggestions as to which intervention or program/service characteristics might produce positive effects for older patients in certain acute care settings.**

Of the ten individual interventions listed at the outset of this section, none demonstrated unqualified effectiveness across all clinical settings. For example, Crotty et al. evaluated effects of reorientation measures, intensive occupational therapy, and cognitive behavioral therapy interventions to improve physical and psychosocial functioning after hip fracture, and found that none of these offered any advantages over usual care. (42)

On the other hand, the literature in our synthesis did contain some positive indications as to which interventions or program/service characteristics might produce positive effects for older patients in acute care. A highly-rated Cochrane review by de Morton et al. assessed the effect of exercise interventions for older acute care inpatients on functional status, adverse events, and hospital outcomes. (43) Six of the nine included trials were multidisciplinary interventions that included an exercise component and three were exercise-only interventions. The six multidisciplinary interventions were delivered in specialized units with geriatric care teams (three of these studies also appeared in the review by Ellis et al.) (44) while the three exercise-only interventions were delivered in general medical wards by a physiotherapy assistant; separate effect size estimates were calculated for each group. On this basis, de Morton et al. concluded that the multidisciplinary interventions may result in small but significant improvements in acute hospital length of stay (LOS), cost of hospital stay, and the proportion of patients discharged directly to home. The exercise-only interventions, on the other hand, did not significantly improve LOS, costs, or the proportion of patient discharges to home, leading the authors to suggest that:

> *"multidisciplinary intervention components other than exercise may explain improved hospital outcomes. These results could be explained by increased medical, nursing or allied health intervention, a combination of improved team goal setting and discharge planning and/or increased patient contact time during acute hospitalisation"* (p. 15).

The authors do not mention the setting of the intervention in their list of possible explanations for the disparity in outcomes between the two groups, but it seems reasonable to speculate about how a specialized geriatric unit might provide a more supportive environment for models of care that include exercise components. Similarly, a review of 26 primary studies by Hickman et al. finds that "care delivery appears to be even more effective if the management of an older person is undertaken within a specially designed unit, promoting communication strategies across the care continuum and emphasizing discharge planning" (51, p. 123). Though this was one of the lowest-scoring reviews in our synthesis, it is perhaps worth noting that the authors appear to corroborate the analysis found in the higher-scoring reviews by de Morton et al. and Ellis et al., which are discussed above. (43,44)

Finally, a retrospective analysis of 13,343 older patients with hip fracture by Schilling et al. showed that decreased hospital-wide nurse staffing levels are associated with increased in-hospital mortality. (53) These authors found that the odds of in-hospital mortality decreased by a ratio of 0.16 for every additional full-time equivalent registered nursing staff added per patient day, an association that is significantly larger than for most other diagnoses. The researchers offer some provisional explanations for why hip fracture patient outcomes might be especially sensitive to differences in nurse staffing

levels. They speculate that increased nurse staffing levels might allow earlier detection and prevention of the various complications associated with this diagnosis, and might also improve access to the operating room and wait times for surgery.

## Older Adults' and Families' Experience of Being in Hospital

Previous research by this report's lead author demonstrates that hospitalization can be difficult for older people, their families, and service providers. (29) Other research studies not included in this synthesis suggest that their experiences have been troublesome. (61-63) These negative experiences have related to gaps in attention to needs and expectations that revolve around the physical environment, (64) and being discharged from hospital before they perceived themselves to be ready. (29) Older people also report that being involved in decision-making, receiving acknowledgement of and provision for their individuality, the anticipation of their needs by nurses, and, finally, the willingness of staff to assist in care activities are important. (65,66)

Gaps identified in interpersonal aspects of caring included: communication, sharing information, rapport and knowledge of the patient as a person, and overt demonstrations of kindness, concern, and sensitivity. Informants in Attree's study described staff taking time with patients, answering requests for information, and relationships between professional staff and patients as important factors for positive health care experiences. (64) Families also report that information is needed in order to manoeuvre through the system and prevent worrying. (67,68) The need for information becomes critical to make sense of healthcare experiences such as hospitalization. In practice, reciprocity, recognition and involvement in care are found in the atmosphere of an inpatient unit that is created by interpersonal relationships and organizational influences; it is experienced as milieu and reflects the treatment of older people in hospital. (29)

***Key message #7:*** **Relational aspects of care delivery such as good communication between staff, older patients, and family members, and effective teamwork with minimal conflict and stress are important.**

Our synthesis found one systematic review – Bridges et al. – containing qualitative studies between 1999 and 2008 that explored the views and experiences of older people and their relatives as concerns hospital care. (48) This review contained many of the same methodological deficiencies as the review by Sinha et al., but its search was transparent and comprehensive. (49) Furthermore, it employed sensitivity analysis to demonstrate that its findings were robust even in the absence of low quality studies, which suggests that the low quality studies contributed little to the findings. For these reasons, we include its findings here. The authors identify three key features of care that were linked to more positive patient satisfaction: a 'connected', reciprocal relationship with staff; staff recognition of patients' unique identities; and shared decision-making. We discuss each of these in turn.

The patients in the review by Bridges et al. expressed a need for reassurance that their problems were being taken seriously by staff, that their needs would be met, and that they were seen as human beings that mattered to others. (48) Maintaining contact with family and social networks while in the acute care setting helped patients feel connected, particularly where the patient had cognitive and/or communication difficulties. In order to cultivate reciprocal relationships with their patients, the authors encourage acute care staff to ensure that patients feel welcome, respected, and confident that help will be given when it is needed. The authors further suggest that it is important to create an atmosphere that enables patients to interact with family and with one another. The studies in their review demonstrated that the absence of these kinds of factors heightened patients' feelings of anxiety.

*"…to cultivate reciprocal relationships with their patients, the authors encourage acute care staff to ensure that patients feel welcome, respected, and confident that help will be given when it is needed. "*

Bridges et al. also found that loss of identity was a major hazard of admission to inpatient care. (48) Their review showed that older inpatients sometimes have difficulty remembering and relating to the important people and events in their lives, which can lead to depersonalization and a loss of the patient's sense of self-worth. For this reason, staff should strive to acquire knowledge of the patient's life context, including their family and occupation. Protecting patients' privacy, personal space, and belongings are also important to preserving their sense of self in the hospital environment.

Finally, Bridges et al. found that older patients are more likely to take a fully active role in their recovery only if they understand and are involved in decisions about their care and discharge. (48) Obviously, the patient's ability to participate actively in decision-making will depend on his/her condition – particularly his/her cognitive status – but at minimum staff should always strive to ensure that patients and relatives understand as well as possible what is happening and what is planned. For their part, staff should try to understand each patient's expectations and wishes about their health. Once again, the studies in this review showed that the absence of this kind of mutual understanding can cause the patient anxiety.

In sum, Bridges et al. conclude that:

> *"Findings indicate that patients and relatives want relationships that engender reciprocity, recognition, and involvement and this reflects recognition that they too have an active role in shaping their own and others' experience. However, how best to facilitate the involvement of patients and relatives in creating and maintain this culture and context has yet to be established"* (48, p. 105).

## Limitations of the Synthesis

In this synthesis of the evidence, we were unable to locate high-level research covering the full spectrum of items identified by our Newfoundland and Labrador healthcare partners as itemized on page 6 of this report. Examples of items that did not emerge in our systematic review of the literature included: clinically relevant topics like the geriatric syndromes (falls, incontinence, dementia/cognition, mobility issues/deconditioning), specific features of the practice environment, and the built environment and its physical design features. Also lacking in the systematic reviews was evidence related to family caregivers' roles and needs, and to non-clinical programs in the hospital. This evidence would have included the contributions the human resource department makes in recruiting knowledgeable interdisciplinary staff, and the roles of housekeeping, clinical pharmacy, nutrition, and food services. Hospital policies and procedures, as well as linkages to the community and primary care system, may also affect the quality of hospital care for older people, but these subjects were also absent from the systematic reviews.

Outcomes like LOS, re-admission, iatrogenic problems, costs, and specific multidisciplinary resource use were not reported consistently across reviews. In many cases, it was difficult to determine the effectiveness of particular models or model elements. However, the quality of care for older people at individual hospitals may be improved if there is a careful match between the needs of the older people and the hospital's programming. This is in keeping with the assumption that a "one-size-fits-all" approach is less effective than tailoring programs and services to meet specific needs that are reflective of a heterogeneous population like older adults with and without chronic health care needs.

There is considerable overlap between the thematic areas discussed in this synthesis. Variation in methodological design across both the reviews and the studies included within those reviews has made it challenging to draw firm generalizations. Even with clearly-specified inclusion and exclusion criteria, it was often difficult to isolate the relevant knowledge within a given article and determine whether or not that article should be included. Overlap is a confounding factor across the reviews because, in some of the reviews, the programmatic or interdisciplinary model of care *was* the intervention, and was measured for effectiveness across a range of outcome measures (see Table 9 in Appendix A). Conroy et al. serves as an example of such a review. Here, the authors examined the evidence for the effectiveness of CGA (a model of service delivery) for frail older people who developed a crisis and attended hospital**,** but who were assessed, treated and discharged either immediately or within a short time period following hospitalization. (45) In the case of this review, two trials evaluated a geriatrician-led CGA that focused on falls prevention for cognitively able individuals, and three trials evaluated rapid-access, nurse-led but geriatrician-supported CGA and management. In this case, it is possible to conceptualize CGA as *both* a model of care *and* a specific intervention.

Defining the *most effective* model of care remains elusive. In part, this is because of variability across studies but also, and more importantly, because the studies rarely describe the contextual features of the hospitals where such programmatic approaches were implemented. As Pawson and Tilley indicate, one cannot fully understand the impact of a program or model of care without in-depth knowledge of the context in which that program has been developed and implemented. (69) It is also important to know the underlying reasons why something works. The evidence we have synthesized lacked this type of detail. Further, our synthesis did not locate any discussion of models of care applied outside the urban metropolitan hospital setting, and this makes it hard to reach any conclusions about acute care in the small-town and rural settings common in Newfoundland and Labrador.

Nine of the eleven reviews we selected for our synthesis included some primary studies conducted in hospital settings specifically designed for older adults. Given that our focus in this report is on service delivery in acute care hospital units *not* exclusively designed for older adults, interpreting the findings from those nine reviews was something of a challenge. Because some of the evidence included research on units designed exclusively for older adults, it was difficult to determine applicability of the findings to this report. The web-based companion document to this report (www.nlcahr.mun.ca/chrsp) documents the various steps we took to ensure that the findings we present here are adequately supported by the available evidence on non-geriatric settings.

## Key Messages from the Evidence Synthesis

Programs and services can improve in-hospital practices when they are tailored to meet the needs of both older people and the organization. Although there were challenges to the synthesis, seven key messages have been distilled to help bring about an appropriately adjusted acute care setting for older adults.

1. Models of care show promise when concentrated in self-contained units possessing specialized gerontological expertise and interdisciplinary knowledge, but there is less evidence in our synthesis to suggest that these models can be delivered successfully outside of such units.

2. Models of care delivered outside of specialized geriatric units require professional staff with enhanced training and skill sets, as well as careful reallocation of existing hospital resources.

3. Models of care are more successful when they incorporate a collaborative interprofessional team approach, though the literature provides little direction as to the most effective ways to configure such teams.

4. Geriatric assessment in its different variants is central to positive outcomes in inpatient hospital units by contributing to individual function and broader system outcomes such as shorter stays and fewer hospital readmissions.

5. Enhanced discharge planning contributes to positive patient satisfaction and quality of life, and reduces hospital resource utilization .

6. No single intervention demonstrated unqualified effectiveness across all settings, but there were some suggestions as to which intervention or program/service characteristics might produce positive effects for older patients in certain acute care settings.

7. Relational aspects of care delivery such as good communication among staff, older patients, and family members, and effective teamwork with minimal conflict and stress are important.

# The Newfoundland and Labrador Context

*Throughout the course of this project, we have tried to identify contextual factors unique to this province that may influence the relevance and applicability of the research-based evidence. This section of the report addresses those factors, and is based on an analysis of relevant administrative data and consultations with key informants.*

## Contextualization Approach

The consultations that informed our contextual analysis comprised two team meetings, attended by a two-thirds majority of the project team (team members are listed on page 3); a series of follow-up one-on-one interviews with project team members conducted by Robert Kean, approximately 30-60 minutes in length; and two supplementary interviews with individuals not on the project team, also conducted by Robert Kean. One supplementary interview was conducted with the co-author of a report on rehabilitative care in the province – referenced below – and the other was conducted with the Director of Rehabilitative Care for the Eastern Regional Health Authority. These two individuals were interviewed when it became apparent that acute care discharge planning decisions were determined to a large extent by the availability of post-acute services such as rehabilitation and long-term care (more on this below). Since project team members' primary expertise was in acute care, and not in rehabilitative care, we needed to look beyond our initial interview focus in order to fully address this subject.

Interview questions were derived from the discussions at the two project team meetings, at which time team members were asked to identify important contextual issues facing acute care providers in Newfoundland and Labrador. In assembling the project team, we deliberately sought out persons with extensive professional experience in this subject area as well as practical knowledge of the province's health system. Some team members also had a background in scholarly research, but this section of the report is based primarily on team members' practical experience as clinicians, administrators, and/or decision makers. In some cases, our interview subjects offered suggestions as to how health system planners should make use of the findings generated in the synthesis. Insofar as these suggestions seemed relevant to the synthesis findings, we have reproduced them here.

## Client Base

Population aging and rural outmigration are occurring all across Canada, but these demographic trends are especially relevant in Newfoundland and Labrador. In 2009, the proportion of persons aged 65 years and over in this province was close to the Canadian average – 14.8% compared to 13.9% in Canada as a whole. At that time, there were four other provinces with a higher proportion of older adults. According to all projected scenarios, however, Newfoundland and Labrador will have the highest proportion of older adults in Canada by the year 2036 – between 30.6% and 32.1%.(70) This projected demographic shift has serious implications for acute care services, since older adults are the greatest consumers of these services. In the 2010/2011 fiscal year, older adults accounted for 31.9% of all acute

care hospital separations in this province and 49.5% of all hospital days.[5] Clearly, older adults place proportionally higher demand on the health system than do other age groups, and as their share of the population grows, we can expect that demand to grow along with it.[6] This challenge will be especially pressing in Newfoundland and Labrador, given that its population will age to an even greater extent than the populations of other Canadian provinces over the coming decades.

Newfoundland and Labrador has also been powerfully affected by rural outmigration. Between 1976 and 2002, net outmigration reduced the province's population by approximately 98,700 people, most of whom were working age (71) (to put this in perspective, the 2011 census estimates that the province's current population is 514,536). According to Statistics Canada, net interprovincial outmigration reached record levels in 1997-98 but declined fairly steadily thereafter; by 2008-09 the province experienced net interprovincial *in*-migration for the first time in 24 years. (70) However, the figures for Newfoundland and Labrador as a whole obscure the full magnitude of population decline in many of its rural areas. Between 1991 and 2007, the population of the St. John's Census Metropolitan Area grew by about 8,600 while the population of the rest of the province declined by around 82,000. Population decline has been particularly marked in the smaller towns off the Trans-Canada Highway.(72) The combination of population aging and rural outmigration has effected a more rapid greying of rural Newfoundland and Labrador than has been experienced anywhere else in the province or the country. Between 1996 and 2006 the predominantly rural regions[7] of the province experienced a greater increase in the share of the population 65 and over than any other part of Canada.(73)

Notwithstanding these demographic shifts, the percentage of Newfoundland and Labrador's population that Statistics Canada considers rural[8] is still more than twice the percentage for the Canadian population as a whole.(74) It is not always easy to get a clear sense of how these shifts have affected the older Newfoundlanders and Labradorians who have chosen to remain living in rural areas, even as many younger residents have moved away. A 2010 qualitative case study of one rural community on the southern part of the Avalon Peninsula gives some indication as to how outmigration has affected rural seniors' support networks. While it was clear that population aging and outmigration resulted in fewer people being available to offer informal care, the author found that many older residents were reasonably confident in their ability to access the support they needed to age in place. Although some formal providers of care expressed concern about older adults within the community who remain isolated - whether by choice or because of circumstances beyond their control – the majority of participants averred that there was a strong culture of helping in this community of fewer than 1,000 people. In many cases, friends and neighbours had filled the gaps in support created when younger

[5] Source: Clinical Data Management System (CDMS) 2010/2011, Newfoundland and Labrador Centre for Health Information. Notes: Includes acute care hospital separations (discharge, death, or sign out) with specified diagnosis. Frequencies are based on number of hospitalizations; a single patient may have been hospitalized multiple times within a fiscal year. An older adult is defined as someone 65 years of age or older.

[6] We tried to access data on the current and projected future prevalence of the top acute inpatient conditions affecting older patients in Newfoundland and Labrador, but were unable to identify a source for such data.

[7] In the source cited, "predominantly rural regions" are defined as census divisions in which more than 50% of the population lives in rural communities, which are in turn defined as census consolidated sub-divisions with a population density of less than 150 persons per square kilometre.

[8] According to Statistics Canada, "rural population" refers to persons living outside centres with a population of 1,000 AND outside areas with 400 persons per square kilometre

families moved away. Younger seniors, in particular, were increasingly required to look after not only their own older family members, but many of their older friends and neighbours as well. However, these younger seniors described their own ability to remain in the community as tenuous, and dependent on whether there would be a further decline of services. To be sure, the generalizability of qualitative case study findings should never be taken for granted. Particularly noteworthy in this respect is that the community in question had a health clinic with pharmacy, lab, and x-ray facilities, and this no doubt contributed to its residents' confidence about aging in place. At minimum, though, the study seems to suggest that the effects of outmigration are quite complex and will vary from community to community, and from person to person; some older adults will fill the gaps by drawing upon the support of friends and neighbours, and some will prove more vulnerable to the loss of informal sources of support.(75)

## Acute care Infrastructure

For the purposes of the contextualization section of the report, we defined an acute care facility as any hospital or health centre with at least one acute care bed for overnight patients. Based on that definition, Newfoundland and Labrador has thirty acute care facilities spread across four administrative health regions. Figure 1 shows the geographic distribution of these sites along with their service catchment areas in Newfoundland and Labrador. Table 4 gives the breakdown of health facilities in each region.

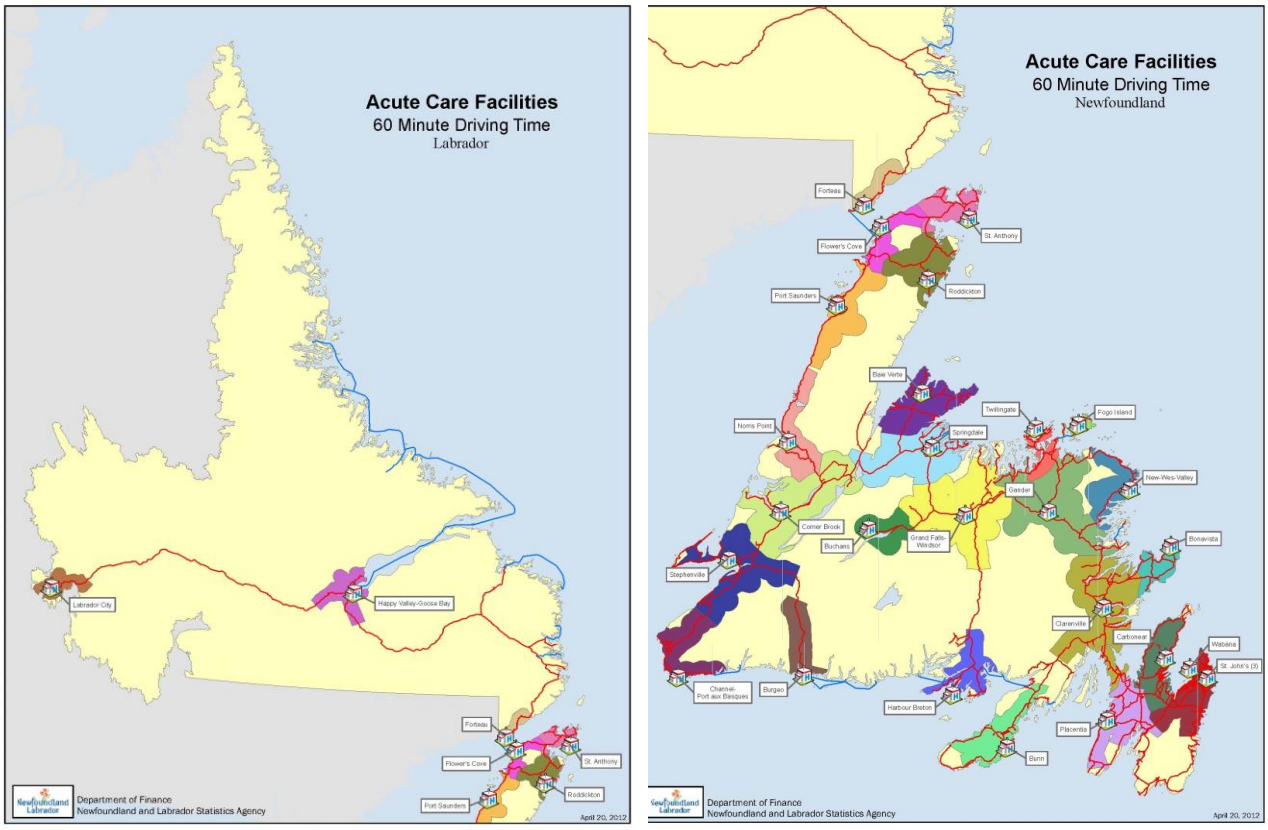


Figure 1: Newfoundland and Labrador acute care facilities and catchment areas (representing sixty-minute driving time to the facility)

| FACILITY NAME | NO. OF ACUTE CARE BEDS |
|---|---|
| **Eastern Regional Health Authority** | |
| 1. Health Sciences Centre (St. John's) | 350 |
| 2. St. Clare's Mercy Hospital (St. John's) | 206 |
| 3. Waterford Hospital (St. John's) | 89 (65 acute, 17 forensic, & 7 short stay) |
| 4. Carbonear General Hospital | 80 |
| 5. Dr. G.B. Cross Memorial Hospital (Clarenville) | 47 |
| 6. Burin Peninsula Health Care Centre (Burin) | 41 |
| 7. Dr. Walter Templeman Health Centre (Bell Island) | 3 |
| 8. Placentia Health Centre | 10 |
| 9. Bonavista Peninsula Health Centre | 10 |
| **Eastern Health total:** | 836 |
| **Central Regional Health Authority** | |
| 10. James Paton Memorial Health Centre (Gander) | 83 |
| 11. Central Newfoundland Regional Health Centre (Grand Falls-Windsor) | 116 |
| 12. A.M. Guy Memorial Health Centre (Buchans) | 2 |
| 13. Brookfield Bonnews Health Care Centre | 12 |
| 14. Fogo Island Health Centre | 5 |
| 15. Notre Dame Bay Memorial Health Centre (Twillingate) | 12 |
| 16. Connaigre Peninsula Health Centre (Harbour Breton) | 7 |
| 17. Baie Verte Peninsula Health Centre | 7 |
| 18. Green Bay Health Centre (Springdale) | 9 |
| **Central Health total**: | 253 |
| **Western Regional Health Authority** | |
| 19. Western Memorial (Corner Brook) | 192 |
| 20. Sir Thomas Roddick Hospital (Stephenville) | 44 |
| 21. Dr. Charles L. LeGrow Health Centre (Port aux Basques) | 14 |
| 22. Calder Health Centre (Burgeo) | 3 |
| 23. Bonne Bay Health Centre (Norris Point) | 8 |
| 24. Rufus Guinchard Health Centre (Port Saunders) | 7 |
| **Western Health total:** | 268 |
| **Labrador-Grenfell Health Authority** | |
| 25. Labrador Health Centre (Happy Valley-Goose Bay) | 25 |
| 26. Captain William Jackman Memorial Hospital (Lab City) | 14 |
| 27. Charles S. Curtis Memorial Hospital (St. Anthony) | 54 |
| 28. White Bay Central Health Centre (Roddickton) | 4 |
| 29. Strait of Belle Isle Health Centre (Flower's Cove) | 2 |
| 30. Labrador South Health Centre (Forteau) | 5 |
| **Labrador-Grenfell Health total:** | 104 |
| | |
| **NEWFOUNDLAND AND LABRADOR total:** | **1461** |

Table 4: Acute care facilities in Newfoundland and Labrador

**Key message #1** from the evidence synthesis suggests that self-contained units possessing specialized gerontology interdisciplinary expertise would be a valuable asset in any effort to provide effective acute care for older patients. To date, however, the only facility in the province with an acute care unit designed especially for older adults is the Waterford Hospital in St. John's, which has an 18-bed psychogeriatric assessment unit. Many of the facilities in the more rural areas of the province are likely too small for a specialized unit to be practicable. This lack of specialized geriatric acute care infrastructure must be taken into account when considering ways of improving care for older patients. One of our project team members drew particular attention to the potential advantages of having a dedicated geriatric emergency assessment area within hospital emergency departments. Some hospitals in the United States, for instance, have opened separate geriatric emergency departments and there are preliminary indications that the creation of these new units may be associated with better patient satisfaction ratings, reductions in unscheduled return visits, and fewer inpatient falls.(76) As things currently stand in Newfoundland and Labrador, older patients are treated like all other patients presenting to the emergency department. In the bigger facilities, older patients waiting for transfer to other units may be moved around the emergency department several times in order to accommodate the influx of incoming patients. During this period there may be delays in carrying out non-urgent interventions ordered for the patient- in some cases such interventions do not occur until the patient actually arrives at the destination hospital unit. While in the emergency department, patients are provided with meals and prescribed medications though certain other routine aspects of care – such as ambulation, for example – may be neglected. In general, the focus while in the emergency department is on the acute phase of the patient's illness, and there is not as much attention paid to non-acute co-morbidities and other aspects of care. It is not difficult to see how older patients in this kind of a care environment might be vulnerable to iatrogenic complications like delirium and deconditioning.

The final report of the 'Seniors Summit' convened in 2011 by the Newfoundland and Labrador Medical Association may also provide some indication of the key gaps in the province's acute care infrastructure. The report called for the establishment of an "Acute Geriatric Care Centre" within a designated hospital.(77) This care centre would serve as the central intake for older adult patients and would have the ability to accept immediate transfers to an eight-bed Acute Geriatric Medical Assessment Unit for short stays of up to 72 hours. The assessment unit would have a higher staff-to-patient ratio and priority access to investigations and consults. It should be noted here that the Eastern Regional Health Authority has recently formed a Seniors Committee, and this committee is currently planning a pilot project that would involve the creation of an ACE unit – or a close approximation – within one of the St. John's hospitals.

## Training/Skill Level of Acute Care Providers

Given the lack of specialized acute care infrastructure for older adults in this province, the second key message from the evidence synthesis becomes particularly important. **Key message #2** states that care delivered outside of specialized geriatric units requires professional staff with enhanced training and skill sets. At present, there are few acute care providers in the province with formally certified training or expertise in geriatrics or gerontology. According to the College of Physicians and Surgeons of Newfoundland and Labrador, there is only one Royal College-certified specialist in geriatrics practicing in this province and this individual is not a full-time acute care provider. We have also been told that there

are some general practitioners and internists located in different parts of the province who have received some post-graduate training in geriatrics. The chart below provides information from the Association of Registered Nurses of Newfoundland and Labrador (ARNNL) Member Database on the number of registered nurses (RNs) employed in the acute care facilities listed above who have some kind of specialization in gerontology.[9]

| Region | Gerontology Specialization | | |
|---|---|---|---|
| | CNA Certification | Post-Basic Course | Both |
| Eastern | 2 | 2 | 0 |
| Western | 2 | 3 | 1 |
| Lab-Grenfell | 0 | 0 | 0 |
| Central | 6 | 1 | 1 |

Table 5: Acute care Registered Nurses in Newfoundland and Labrador with specialization in gerontology

The paucity of acute care providers with specialized geriatric skills and expertise must be taken into account when considering ways of improving care for older patients in Newfoundland and Labrador. The project team members we spoke to about this issue were particularly emphatic about the salutary impact of advanced practice nurses (APNs) on the care of older patients. The Canadian Nurses Association defines advanced nursing practice as "an advanced level of clinical nursing practice that maximizes the use of graduate educational preparation, in-depth nursing knowledge and expertise."(78) There are two APN roles currently recognized in Canada: the clinical nurse specialist and the nurse practitioner. According to Mary Bursey, a Memorial University Nursing professor and former Clinical Nurse Specialist in geriatrics, APNs not only engage directly in clinical practice, they also educate patients, family, and staff; utilize current research in their practice; provide consultation to other interdisciplinary team members; and play a key leadership role within their organizations. An APN with training in gerontology can help to dispel ageist attitudes and patterns of communication in hospital units by sensitizing staff to the older patient's unique needs and perspectives. As well, his/her specialized expertise can often be an important asset for staff when they must confront challenging clinical situations. For example, it is often difficult to distinguish between dementia and delirium, and a failure to correctly diagnose these conditions can lead to ineffective and even counter-indicated treatments, which can, in turn, delay or impair patient recovery. For staff with heavy workloads and a range of clinical responsibilities, the ability to consult with an APN trained in gerontology can make a significant difference in quality of care for older patients. His/her influence can extend in other directions as well; a favorably placed APN can have a positive influence on hospital policy by

[9]By "specialization" we mean either Canadian Nurses Association (CNA) certification or a post-basic gerontology course of at least 300 hours. CNA certification is an exam-based credential reserved for registered nurses who meet specific nursing practice and testing requirements. It should be noted the chart provides self-reported information gathered from nurses' registration renewal forms; the ARNNL does not verify information provided by members concerning their acquisition of specialized training. The reader should also be aware that the number of CNA-certified nurses within the provincial health care system *as a whole* – i.e., not just in acute care – is significantly larger; according to the ARNNL database, as of March 2012 there were 44 RNs in the province who have attained CNA certification in gerontology, 32 who have completed a post-basic gerontology course of at least 300 hours, and 8 who have done both.

encouraging managers to update out-of-date practices, pilot new projects, and requisition needed resources. According to ARNNL records, the province currently has three APNs – two nurse practitioners and one clinical nurse specialist – with either CNA certification or a post-basic course in gerontology, and only one of these works in an acute care setting (Wells, J., personal communication, July 6, 2012).

Notwithstanding the potential benefits of having more doctors and nurses with advanced training, our informants indicated to us that there is a more pressing need right now for improved *basic* geriatric education for all provider groups. This theme was echoed by every one of our project team members. We were told that it would not be feasible to try and place an APN in every acute care setting in the province, and this is particularly true with respect to the smaller, more rural sites of service. In this context, basic geriatric education for all provider groups becomes all the more important. As discussed earlier in this report, the conditions presented by older patients in acute care are often related to complex, multifaceted chronic health problems that can easily go undetected by hospital staff trained to respond to acute illness. Such problems may be especially difficult to uncover if staff are unable to distinguish them from normal physiological age-related changes. For this reason, caring effectively for older patients requires a fundamentally different approach than would be taken with younger patients. Dr. Roger Butler of the Ross Family Medicine Centre at Memorial University explained that when dealing with younger patients, it is often quite sufficient to focus narrowly on the presenting condition and plan the patient's treatment on the basis of a single diagnosis. With an older patient the clinician must take into account the full suite of factors – medical and otherwise – that might impair the patient's functioning in his/her everyday setting. Clinicians who work with older patients must therefore have a solid grounding in both normal age-related changes as well as the kinds of risk factors to which older patients are particularly vulnerable.

Unfortunately, we were told over and over again that a great many of our acute care providers lack this basic grounding. Medical and nursing students emerge from their training with a great deal of technical competence, but some informants felt that recent graduates lack the kind of therapeutic communication skills required to properly assess older patients and involve them in treatment planning and evaluation. Some informants even told us that they had witnessed troubling lapses in basic patient care, which encompasses things like nutrition, mobility, and recreational activities. Overall, informants emphasized that education is needed in order to sensitize healthcare providers and the system as a whole to ageism[10] and to the unique set of needs that are generally common to all older patients. As mentioned earlier, the second key message from the evidence synthesis points to a need for staff with enhanced training, but the potential benefits of education targeting ageism are also supported by **key message #7** which states that "relational aspects of care delivery such as good communication between staff, older patients, and family members, and effective teamwork with minimal conflict and stress are important elements for older people to experience in the hospital environment."

The problem of how to address this deficit in basic geriatric education and upgrade the skill level of acute care providers is beyond the scope of this report, but informants had some promising suggestions.

[10] In this context the term "ageism" refers to discrimination or prejudice against older persons.

One such suggestion involved the development and dissemination of care guidelines and protocols for those elements of hospital care that are especially relevant to older adults. These might cover such matters as nutrition and hydration; wait times; routine screening for delirium; identification of patients at risk of functional decline; timely mobilization; removal of indwelling catheters; and discharge assessments. This could be done at the level of individual institutions, regions, or for the province as a whole. This is one area where RHAs might be able to benefit from the services of an APN with clinical expertise in gerontology. APNs are uniquely positioned within the nursing profession to inform the process of guideline development by virtue of their graduate-level training and familiarity with current evidence-based practice. Establishing and promoting formal standards of care would likely be a positive first step in ensuring that front-line providers are knowledgeable in the principles of high-quality geriatric care.

*"At present, Central Health stresses continuing education as a way for staff to keep current, and encourages it by paying for nurses' certification fees and purchasing educational resources that staff can access."*

Rosemarie Goodyear, Senior Vice President of Quality, Planning, and Priorities for the Central Region, pointed out that many of the facilities within her region – and particularly the smaller, more remote sites of service – are operating with a small number of core staff and cannot afford to send individuals off the unit for training for even 2-3 hours at a time. In her view, managers must find creative ways of building learning opportunities into everyday practice. She listed case conferences, rounds, and even lunch breaks as episodes in the daily round that could be adapted for the purpose of enhancing staff learning. Geriatric curriculum offered online in modular form is another educational tool that would not require providers to be absent from their units for extended periods. At present, Central Health stresses continuing education as a way for staff to keep current, and encourages it by paying for nurses' certification fees and purchasing educational resources that staff can access. One of our other project team members recommended that both large and small facilities would benefit from the 'train the trainer' method. This involves designating nurse 'champions' who would receive special training and then disseminate this knowledge to their colleagues on staff. Finally, education could be built into quality improvement initiatives. Unit managers could be supplied with tools to assess the extent to which practices on their units are rooted in available protocols and research evidence. Insofar as assessments identify areas for potential improvement, assistance could be provided to managers so that they could plan improvements. In general, Ms. Goodyear felt that the standard multi-course curriculum that draws staff away from their units is not as feasible or effective as building learning opportunities into everyday practice.

Cynthia Davis, Vice President of Patient Services for the Western Region, told us that the smaller facilities within that region – these include the Dr. Charles LeGrow Health Centre, the Calder Health Centre, the Bonne Bay Health Centre, and the Rufus Guinchard Health Centre – deliver both acute and long-term care, and both kinds of services are delivered by the same staff. At Western Memorial Hospital and the Sir Thomas Roddick hospital, by contrast, units are staffed by more specialized personnel. Given that long-term care staff members are generally better trained in principles of

geriatric care, Ms. Davis suggested that those smaller rural sites might be better at delivering age-appropriate care for older adults with acute conditions.

## Care Processes

**Key message #3** from the evidence synthesis states that "Models of care are more successful when they incorporate a collaborative inter-disciplinary team approach," but it was difficult to get a sense of how well acute care delivery in the various regions conforms to this ideal. Understanding these kinds of complex interactive dynamics would require in-depth participant observation across multiple sites, and that was not possible in this study. However, our informants did identify some areas for improvement in the way acute care providers in this province work together to help older patients. One theme that came up in our discussions with informants was communication among providers. Even in the large tertiary care centres where interdisciplinary practice has been a long-standing norm, informants told us that clinicians still sometimes have difficulty thinking outside the parameters of their particular practice focus. Older patients are not served well by this approach since they often have a range of problems and co-morbidities that may not fit neatly within a particular specialist's purview. For that reason, any initiative that encourages providers to communicate more effectively across professional and disciplinary boundaries would likely benefit older patients in particular. Another area for potential improvement is care planning. We heard that in some – though not all – facilities care planning is ad hoc and haphazard. Little forethought is given to possible contingencies, and the lack of careful planning can be frustrating for staff, patients, and families alike. Given their vulnerability to iatrogenic complications while in hospital, older patients can be particularly vulnerable to the failure to set appropriate treatment benchmarks and plan for every possible contingency. Again, any initiative that encourages providers to work more effectively toward shared patient care goals would be of benefit to older patients.

**Key message #4** highlights one acute care process that could be improved in the short-to-medium term in this province and with a modest outlay of additional resources. The reader will recall that, according to this message, "[g]eriatric assessment in its different variants is central to positive outcomes in inpatient hospital units by contributing to individual function and broader system outcomes such as shorter stays and fewer hospital readmissions." At present, none of the acute care facilities in this province use a validated global assessment tool tailored specifically to older patients. The tools currently in use, such as the Canadian Triage Acuity Scale used in the ED, are intended for all age groups and tend to work best on patients with a prominent, single presenting condition; it would appear that they do not cover all of the variables and risk factors relevant to older patients, and they are not as effective for people who are unable to pinpoint a single cause of their malaise. Our informants felt that there was a clear need for a geriatric emergency management tool administered by dedicated personnel, and for protocols that would outline a course of action for care providers once the assessment results were known. For example, if the assessment indicated that a patient was at risk for a particular complication, then the personnel conducting the assessment would need to know what actions would be required to mitigate the risk. Fortunately, there is a range of validated tools to choose from, so the province would not have to develop one.

## Human Resources

**Key message #3** affirms the value of a collaborative interdisciplinary team approach to the care of older patients. One of the perennial obstacles to the adoption of a truly inter-professional approach to care delivery is the inadequate pool of allied health workers in the provincial health care system. Physiotherapists (PTs), occupational therapists (OTs), and social workers are essential to ensuring a safe and successful transition from the hospital unit to the home setting. In this sense, the chronic shortage of allied health personnel is not only relevant to the third key message from the evidence synthesis, but also to **key message #5:** "Enhanced discharge planning contributes to positive patient satisfaction outcomes, improved quality of life, and more efficient use of hospital resources." The charts below provide Canadian Institute for Health Information (CIHI) data on the numbers of PTs and OTs working in each of the regions.[11] It should be noted here that the CIHI data may not provide precise estimates of the number of full-time equivalent PTs and OTs working in the acute care setting, at least as we have defined it. These data do not distinguish between full-time employees and part-time, temporary, or casual employees.

| | Eastern | Central | Western | Labrador-Grenfell | Unknown/ Postal Code not found | Total |
|---|---|---|---|---|---|---|
| Hospital | 7† | 10 | 14 | † | 1 | **112** |
| Community | 11 | 0 | 0 | † | 1 | **1†** |
| Professional Practice | 5† | 6 | 11 | † | 2 | **76** |
| Other | † | 0 | 0 | 0 | 0 | **†** |
| Unknown | 1 | 0 | 0 | 0 | 2 | **3** |
| **Total** | **147** | **16** | **25** | **11** | **6** | **205** |

Table 6: Physiotherapists by Primary Place of Employment by Health Region, Newfoundland, 2010

| | Eastern | Central | Western | Labrador-Grenfell | Unknown/ Postal Code not found | Total |
|---|---|---|---|---|---|---|
| Hospital | 75 | † | 11 | † | 3 | **100** |
| Community | 20 | † | † | 0 | 3 | **32** |
| Professional Practice | 1† | 0 | † | † | 0 | **21** |
| Other | † | 0 | 0 | † | 1 | **9** |
| Unknown | 0 | 0 | 0 | 0 | 1 | **1** |
| **Total** | **121** | **9** | **20** | **5** | **8** | **163** |

Table 7: Occupational Therapists by Primary Employer Type by Health Region, Newfoundland, 2010

[11] **Source**: Physiotherapist Database & Occupational Therapist Database, CIHI.
**Notes**: The '†' sign means that the value has been suppressed in accordance with CIHI's privacy policy; this value is from 0-9.
*"Community"* includes residential care facilities, assisted-living residences, community health centres, visiting agencies/businesses, and schools or school boards.
*"Professional practice"* includes group and solo practices/clinics.
*"Other"* includes post-secondary educational institutions, government, industry, manufacturing and commercial, and other employer types not otherwise specified.

Furthermore, CIHI includes within the "Hospital" category any healthcare facility that offers a range of inpatient and outpatient health care services, including rehabilitative and/or mental health services. For the purposes of this paper, we have adopted a more restrictive definition of acute care institutions than has CIHI.

In 2009, Eastern Health released a comprehensive *Rehabilitation Gaps and Needs Assessment*(79) by Dale Morgan and Michelle Ploughman that identified inadequate community-based rehabilitation and follow-up as "[t]he most glaring and serious gap in service for rehabilitation patients in Eastern Health and in the province" and a primary driver of the high number of alternate level of care (ALC)[12] days in Newfoundland and Labrador's hospitals (p. 64). We learned from consultation with project team members that a high proportion of the patients who experience ALC days are older adults, so the shortfall in rehabilitation services is particularly relevant to them. We discuss this subject further below, but it will suffice to note the *Needs Assessment* authors' estimates of the additional full-time equivalent staff required in Eastern Health to remedy the shortfall in that region and improve patient flow through the system:

| Occupation | Additional staff required |
|---|---|
| Physiotherapists | 22 |
| Physiotherapy assistants | 10 |
| Occupational therapy | 21.5 |
| Occupational therapy assistants | 17 |
| Social workers | 24 |
| Dietitians | 18.1 |
| Speech language pathologists | 14 |
| Recreation specialists | 17.1 |
| Recreation therapy workers | 20.5 |
| Psychologists | 14 |
| Rehabilitation nurses | 12 |

Table 8: Assessment of community-based human health resources shortfalls at Eastern Health, as estimated in *Rehabilitation Gaps and Needs Assessment.*

Note that these recommendations pertain only to community-based services – the authors do not provide formal estimates of hospital staffing needs. On February 22, 2012, the provincial government announced that it would employ two additional PTs in the Eastern region as part of a package of measures designed to reduce joint replacement surgery wait times. That aside, discussions with our project team members and with one of the report authors indicate that many of the human resource gaps identified in the report still exist today (Ploughman, M., personal communication, April 16, 2012).

[12] The term "alternate level of care days" refers to the amount of time a patient remains in an acute care bed after the acute care phase of his/her treatment is complete. This situation typically arises because he/she requires other services – such as home care or long-term facility-based care – that are unavailable.

We are not aware of any formal assessments of staffing needs in Central, Western, and Labrador-Grenfell Health, but our project team representatives from those regions agreed that they, too, were hampered by a shortage of allied health personnel. For instance, we heard from Rosemarie Goodyear that the number of PTs employed in Central has not kept pace with the growth of other related services in that region, such as joint replacement surgery. Gaps in staffing levels in this region are indicated by lengthy outpatient waitlists in all acute care sites, as well as increasing inpatient and long term care referral rates. Rufina Letto, Regional Director of Acute Care Services for the Labrador-Grenfell region, told us that Goose Bay and St. Anthony each need a full-time PT, a full-time OT, and at least two rehabilitation aides to support older adults living in the community. Workers based in these two communities may be able to cover the coastal areas of the region, though communities in southern Labrador and the Northern Peninsula with high numbers of older adults would benefit from their own dedicated rehabilitation aides. In general, this is an issue that has been flagged by all the province's RHAs.

## Post-Acute Service Landscape

Post-acute care did not fall within the scope of our evidence synthesis, so we have not attempted to draw any conclusions about effectiveness of particular kinds of post-acute services and interventions. However, as mentioned in the previous section, the lack of such services in this province affects the discharge planning process and, more generally, the quality of acute care for older patients. For these reasons, we felt that the post-acute service landscape in Newfoundland and Labrador merits some brief discussion here. As **key message #5** suggests, a truly age-friendly acute care unit is one that treats the acute phase of the older patient's illness and then expedites his/her access to the appropriate level of step-down care – whether long-term care, rehabilitation, or home support. We felt we would be remiss if we didn't provide some basic assessment of the post-acute service landscape in this province, since the best discharge planning process in the world will likely be compromised if discharged patients have difficulty accessing appropriate downstream services. The aforementioned needs assessment by Morgan and Ploughman illustrates this effect with the aid of NLCHI data. In 2005-06 there were 7,855 acute hospital separations in this province for diagnostic groups matched with National Rehabilitation Reporting System codes. Of the 7,855 acute care patients with these codes, 1,017 – approximately 12.9% – spent some number of ALC days in hospital. That is to say, they remained in an acute care unit for a certain period of time even after the acute phase of their illness had been treated.

> *"In these cases, about 55% or 19,418 days were ALC days. This suggests that some patients with these codes… although stable medically, needed further care to prepare for home or they were awaiting a bed in LTC [long-term care]. Furthermore, about half of these discharged patients will be readmitted to hospital within a year.*
>
> *The challenge for health providers in acute care is that they have more patients with greater rehabilitation needs on their service. In general, patients who are awaiting rehabilitation or*

> *require LTC are given less priority than the acute urgent cases. Staff, including nurses, indicate that in acute care, the primary focus is providing personal care (dressing, bathing, eating) as efficiently as possible. Independence and initiation is not encouraged as the process of teaching and learning takes time. The philosophy is toward illness and not health and independence. It is clear that acute care is not the appropriate place to provide intensive rehabilitation services. Those patients who are medically stable should move to a service or program that specializes in rehabilitation; where physicians, nurses, therapists and support staff are trained to provide that level of care"* (79, p. 61).

Our project team members echoed the suggestion that acute care staff tend to focus primarily on the acute phase of a patient's illness and are not always able to address the full set of needs and risk factors unique to older adults. Consequently, extended hospital stays put older patients at elevated risk of deconditioning and other iatrogenic complications. The 2009 Needs Assessment drew particular attention to shortfalls in rehabilitation services and home support programs. Here it may be useful to distinguish between the different kinds of post-acute rehabilitation service available in the province. At present, there are only two hospitals in the province with dedicated inpatient rehabilitation[13] beds: the L.A. Miller Centre (LAMC) in St. John's and Western Memorial in Corner Brook. The LAMC is the province's only provider of specialized tertiary rehabilitative care, which generally involves high-intensity therapy (i.e., 3-4 hours/day) for patients with spinal cord injury, brain injury, stroke and other severe neurological conditions. Both Western Memorial and the LAMC provide general rehabilitation (2-3 hours/day) for patients with orthopedic and neurological conditions, as well as short-term, low-intensity rehabilitation for patients who do not have the endurance or tolerance for high-intensity therapy. In addition, the LAMC provides an intensive day program. Other hospitals around the province also offer rehabilitation services, though for the most part these are offered on an outpatient basis and are unidisciplinary in nature. Community-based services are available in some areas of the province.

As mentioned above, the Eastern Health Needs Assessment report discerned a need for improved rehabilitation services and increased staff across the continuum, but it found that there was an especially urgent need for enhanced community rehabilitation services. For example, the authors report that about 64% of patients from the LAMC are discharged without any follow-up health services compared to 41% nationally, despite the fact that LAMC patients are, on average, discharged with slightly lower functional ability. It is perhaps not surprising, then, that in the province as a whole 41.6 % of acute care patients with rehabilitation-matched diagnostic codes are readmitted to hospital within one year of their original discharge. Moreover, there appears to be a

[13] Inpatient rehabilitation should not be confused with restorative care or "slow paced rehabilitation," discussed below.

significant regional disparity between Eastern Health and the other RHAs in access to post-acute care options. As noted above, in Newfoundland and Labrador in 2005-06 there were 1017 acute care patients with rehabilitation-matched codes who spent one or more ALC days in hospital. Overall, 55% of the days they spent in hospital were ALC days, but the proportion of ALC days was significantly higher for patients from Central, Western, and Labrador Grenfell (65.2%, 64.2%, and 62.1%, respectively) than for Eastern Health patients (43.6%). Similarly, 37% of patients with rehabilitation-matched codes were readmitted to hospital within one year in Eastern Health, compared to 54.4% in Central Health, 45.9% in Western Health, and 53.1% in Labrador Grenfell Health. Morgan and Ploughman also presented NLCHI data which showed that in 2005-06 there were very few patient transfers to the LAMC from RHAs other than Eastern Health. Comments from their interviews and focus groups suggested that at least some acute care patients from these regions stay in their regional hospital even after the acute phase of their illness has been treated and then go home without rehabilitation, though it should be noted that patients from the Western and Labrador-Grenfell regions who require general or low-intensity rehabilitation are often transferred to Western Memorial Hospital. As well, individuals who live outside the Eastern region sometimes receive acute care from one of the St. John's hospitals and are then transferred to the LAMC. These are recorded as transfers from one of the St. John's hospitals, not from the patient's home region. One of our project team members also pointed out that patients outside the Eastern region may in some cases not realize that they have the option to transfer to the LAMC. In any case, it seems clear that a significant number of patients outside the Eastern region struggle to balance their need for immediate family support with their need for necessary rehabilitative care. This can be an especially dire situation for those older adults who have lost badly needed informal sources of support because of outmigration.

In general, the Central, Western, and Labrador-Grenfell regions share with the rural Eastern Health sites (Burin, Clarenville, Bonavista, and Carbonear) a set of common problems: lack of community-based rehabilitation options; difficulties in recruiting and retaining personnel; lengthy waiting lists for outpatient physiotherapy and occupational therapy; and a shortage of trained home support workers. Morgan and Ploughman also identified a number of regionally-specific rehabilitation problem areas:

- In Central Health there is a need for designated rehabilitation beds with specially trained staff in Gander and Grand Falls-Windsor.
- Rehabilitation providers in Western Health report the need for more community physiotherapy and an outpatient day rehabilitation program.
- Labrador-Grenfell Health has the most limited rehabilitation services in the province. Recruitment and retention of rehabilitation staff is a significant issue, and there is an urgent need for community rehabilitation therapists. Theresa Dyson, Labrador-Grenfell's Regional Director of Community Health, informed us that there is also a need for rehabilitation units in St. Anthony and Goose Bay.

As with the shortage of allied health workers, the gaps in post-acute services are well-known to administrators within both DHCS and the RHAs. In the most recent provincial budget, the government earmarked $18.3 million for the provincial Home Support Program in order to

"address anticipated demand in 2012-13 as more seniors are accessing and applying to the program."(80) The budget also included $81.1 million for ongoing construction work on new and existing long-term care facilities in the Eastern, Central, and Western regions. The Central RHA has recently opened a five-bed restorative care unit in the Notre Dame Bay Memorial Health Centre in Twillingate, the first of its kind in the Central region. In the wake of the 2009 *Rehabilitation Gaps and Needs Assessment*, the LAMC in St. John's improved its intake procedure for patients referred from hospitals outside St. John's, and has also started providing physiotherapy and recreational activities on the weekend (Ploughman, M., personal communication, April 16, 2012). In general, improving the continuum of post-acute care services is an ongoing priority of all the RHAs, but perennial budgetary constraints limit the kinds of improvements they can afford to make.

As a final note, we would like to point out that Newfoundland and Labrador possesses a number of strengths that decision makers can draw upon in their efforts to render the acute care experience more age-friendly. Awareness of the challenges surrounding healthcare for older adults is building as a result of initiatives like the NLMA's Seniors Summit, the aforementioned Needs Assessment, and the province's Healthy Aging Policy Framework and Chronic Disease Framework. The province also boasts a number of health professional schools and a Centre for Collaborative Health Professional Education, housed within Memorial University's Faculty of Medicine, and these could potentially play an important role in any effort to upgrade the skill set of healthcare providers. And as mentioned earlier, there appears to be a resilient culture of informal social support in the province's rural communities. This may help older inpatients from rural areas stay connected with their social networks while in hospital, and it may also help them in the transition back to their home settings. These are just a few examples of local strengths planners and decision makers can build upon as they work to improve the hospital experience for older patients.

# Implications for Decision Makers

*The implications we have listed below are based on the synthesis findings as refracted through the professional perspectives of the clinicians, administrators, and decision makers on the project team, most of whom currently work within the provincial health system. Given the nature of our methodology and the limitations of the evidence in our synthesis, we cannot recommend particular programs, services, or interventions. The reader should instead regard the implications that follow as considerations that decision makers may wish to bear in mind as they contemplate the local relevance and applicability of the research-based evidence synthesized in the first part of this report. The sequence of implications listed below reflects the order in which they were discussed within the main report; these implications are not ranked in order of importance*.

1. Two of the highest quality reviews in our synthesis compared interventions delivered in self-contained units possessing specialized gerontological expertise with interventions delivered outside of such units. These reviews found evidence for the effectiveness of the former but not of the latter. This suggests that RHAs may wish to carefully evaluate the available evidence on the benefits and costs of such units and on how they function within the broader hospital environment, in order to determine whether or not this would be a viable and useful option within their jurisdictions.

2. Allocating space within designated hospitals for the intake, assessment, and triage of older patients could potentially fill a key gap in the province's acute care infrastructure. At present, EDs within the province's larger hospitals are not designed to facilitate comprehensive geriatric assessment and care planning.

3. One of the biggest impediments to the delivery of age-friendly acute care in Newfoundland and Labrador is a lack of a provider workforce with a basic grounding in principles of geriatric care; this deficit in basic geriatric education extends to all provider groups and all areas of the province.

4. Given point #1, RHAs may wish to consider establishing formal standards for elements of hospital care that are especially relevant to older adults. Implementing formal protocols in association with those standards could help to ensure that front-line providers are knowledgeable in the principles of high quality geriatric care.

5. APNs trained in gerontology may be able to help RHAs implement protocols for improving the quality of geriatric care in hospitals, thereby making their organizations more responsive to older patients' unique needs. Strategically positioned APNs can have positive and far-reaching effects on staff learning, organizational expertise, and hospital policy.

6. Decision makers would also be well-advised to find training methods that fit into employees' tight schedules. Educational initiatives that draw staff away from their units for extended periods of time would be particularly problematic for the smaller, more remote sites of services, which tend to operate with only a small number of core staff. In particular, decision makers may wish to look for online curriculum packages that have been found effective elsewhere in increasing hospital staff's knowledge of geriatrics.

7. Older adults are particularly ill-served by fragmented and ad hoc approaches to care. Initiatives that encourage patient care teams to communicate across professional boundaries and work more effectively toward shared patient care goals may be of significant benefit to older patients.

8. Acute care facilities in all regions may wish to consider assigning responsibility for assessment of older patients to specially-trained personnel equipped with a validated geriatric assessment tool. The tools and procedures currently in place in the Emergency Department, such as the Canadian Triage Acuity Scale, may not address the full range of variables and risk factors relevant to older patients.

9. The province-wide shortage of allied health personnel compromises discharge planning processes and undermines interprofessional collaboration. The input of allied health professionals – and, in particular, physiotherapists and occupational therapists – is important for ensuring a successful transition from the hospital unit to the home setting.

10. Effective discharge planning on acute units would seem to require augmentation of post-acute care services, particularly in regions outside Eastern Health. Gaps in the post-acute service continuum are stranding older patients in acute care units, which are not always equipped to provide intensive rehabilitation and other forms of post-acute care.

# Appendix A

## Table 9: Measured outcomes

| Citation | Measured Outcomes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QoL [1] | Cognition | Delirium | Admission/ visit or Read-mission to hospital (ED, ICU) | Functional Outcomes[2] | Mortality | Patient Satisfaction | Falls Musculoskeletal injuries | Costs | Discharge to Nursing Home/ Institutionalization | LOS[3] | Discharge to or remaining at Home |
| Crotty (2010) | | | | | X | | | | | | | |
| De Morton (2007) | | | | X | X | X | | X | | X | X | |
| Ellis (2011) | | | | | X | X | | | | X | | X |
| Conroy (2011) | X | X | | X | X | X | | | | X | | |
| Fealy (2009) | | | | X | X | | X | | | | | |
| Linertova (2010) | | | | X | | | | | | | | |
| Bridges (2010) | | | | | | | X | | | | | |
| Sinha (2011) | X | | | X | X | | X | | | X | X | |
| Steele (2010) | | | X | | X | | X | | X | X | X | |
| Hickman (2007) | | | X | X | | | X | | X | | X | |
| Preyde (2009) | X | | | X | X | X | X | | X | | X | |
| Farber (2011) | | | | X | | X | | | X | | X | |
| Schilling (2011) | | | | | | X | | | | | | |
| Wald (2011) | | | | X | X | | | | X | | X | |

[1] Quality of Life (self-report)

[2] Functional outcomes include: a) Activities of Daily Living (ADL) like dressing, or personal hygiene like bathing, and b) Instrumental Activities of Daily Living (IADL) like grocery shopping or banking.

[3] LOS = Length of Stay, hospital inpatient, emergency department

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