Appendix 3: Levels of Care – Selected Literature Review


The purposes of the study were to evaluate the Resource Utilization Groups (RUGs III) as a unified method for classifying all residential, chronic care and rehabilitation patients at the St. Joseph’s Health Centre, London, Ontario, Canada and to compare the potential funding implications of RUGs and other patient/resident classification systems (Alberta Long Term Care Classification System and the Medicus Long Term Care System). The study demonstrated that the three different classification systems produced significantly different estimates of resource requirements. The authors report that the Alberta System is biased toward the less acute patient, the RUGs III is biased toward the higher acuity rehabilitation patient and the Medicus is biased toward the chronic category. It was reported that these biases could have a profound impact on any potential case mix based funding system.


The Canadian Institute for Health Information (CIHI) prepared an annual report on the status of health care in Canada. Health status (as measured by life expectancy) continued to improve over the past decade. There are variations in life expectancies within regions and specific populations Canada.

In 1999, the total public and private health care spending has increased by 5% from 1998, reaching $86 billion. The ratio of total health care spending to the Gross Domestic Product is fourth among the G7 countries in 1997. Almost 70% of health care services are publicly funded. With the exception of the U.S. all other G7 countries had large public shares of total health expenditures than Canada in 1997.
The hospital sector has been changing with a decrease in the total number of beds, reduced overnight admissions, and decreased length of stay and increases in the proportion of patients being treated through day surgery programs.

In 1996/97, 185,000 seniors lived in health care institutions. Family members and friends frequently provide care for older Canadians with long-term health problems and disabilities. In 1996, approximately 2.1 million adult Canadians provided support for one or more seniors with a long-term health problem.

In 1997/98 seniors made up 12 % of the Canadian population and accounted for 31 % of the acute hospital stays and half of the days in hospital.

Complex Continuing Care is defined as care required for patients with ongoing chronic conditions who need hospitalization. In Ontario, between 1997/8 and 1998/9 there were a total of 27,000 patients admitted to a Complex Continuing Care institution – (which can be an acute care hospital or a free standing institution)

Provincial Home Care programs service about 12 % of Canada’s seniors. Home Care services for younger Canadians are less common. Those who used the home care services required help with Activities of Daily Living. People with the lowest income were more likely to use these services. Equal use by rural and urban dwellers.


A RUG III validation study was performed in Japan, Sweden, England and Wales and Spain to demonstrate that the case mix classification developed in the USA is universally applicable. Results of the study showed that there were large differences in total staff time and trained nurse time spent with individuals in institutional care. High total time and high skill mix was evident in the UK sample. This was due to the fact that these data were from hospital based populations rather than a less resource intense facility.

The authors describe an approach used to relate clinical characteristics of ill elderly patients to the cost of their care. Using the Resource Utilization Groups version III, assessments were conducted at two-week intervals and at discharge. These assessments explained the variations in resource use based on the clinical characteristics of the elderly patients. Their model could be used as a basis for contracting for care of elderly patients.

*Center for Long-Term Care Financing, The LTC Triathlon: Long-Term Care’s Race for Survival, December 7, 2000.*

This report of a survey to nursing home providers asked questions about the state of long term care. Key responses included:

- Primary responsibility of nursing home bankruptcies and quality of care deficiencies is on Medicare and Medicaid – these programs pay little and expect too much.
- Public financing has forced providers to serve the government first instead of consumers.
- Recommends that more private financing will improve the situation.

*Center for Long-Term Care Financing, LTC Choice: A Simple, Cost-Free Solution to the Long-Term Care Financing Puzzle, September 1, 1998.*

This report demonstrates that the solution to long term care financing is to persuade people to consider and confront the risk of long term care while they are young and healthy and affluent enough to save or ensure privately.
Americans fail to prepare for the risk of long term care because:

- They have been able to ignore the risk and rely on Medicare and Medicaid
- The insurance industry has tried to sell asset protection

Solution is to redesign Medicaid to be a loan rather than a grant and the insurance industry should market more aggressively.


The findings of the 1995 National Nursing Home Survey in the U. S. are presented. They indicate that the elderly nursing home residents were predominantly women, over the age of 75 years, white, non-Hispanic, and widowed. The majority of residents received an intermediate level of care (health related institutionalized care but not to the degree of care and treatment normally provided by a hospital or skilled nursing facility). The average length of stay in the nursing home declined from the 1985 findings and this was thought to be a consequence of increased availability of home care services.


The Resident Assessment Instrument (RAI) is mandated for use in all U. S nursing homes that qualify for federal payments – approximately 16,000 nursing homes with over 3 million assessments performed each year.

RAI is the national instrument of Iceland, the provincial instrument for Ontario, and the citywide instrument of Copenhagen. One facility is using the RAI in the Czech Republic and a group of homes were recruited in The Netherlands. Other nations include: Japan, Sweden, Finland, Norway, Spain, Germany, France, Italy and Switzerland.
There are differences in how other nations define “nursing home” - Nations use their institutions for different types of residents through difference in admission and discharge policies and care patterns.


This article describes a comparative study using the U. S. National nursing home Resident Assessment Instrument (RAI) in seven international institutional long-term care systems. The results illustrate a number of similarities and differences. Specifically, the findings illustrate cultural variations including higher percentage of female residents in Italy indicating strong family structures in caring for the seniors in the home. Given that residents in Denmark and Iceland are more independent and are relatively healthier, the findings suggest that Denmark and Iceland may be using their long-term care institutions as social supports rather than for medical care. In Sweden, there are a large number of rehabilitation residents in its geriatric units (have shorter length of stays and light care requirements). The authors report that the nations use their institutions for different types of residents through differences in admission and discharge policies and care patterns. Japanese and Icelandic facilities have two levels of care (skilled and unskilled). Thus the study found that the definition of nursing home had different meanings cross nationally.

The study suggests that a comparison of international residents and their classifications is more valid than conducting a comparison across facilities given these differences.


Based on a sample of 7658 residents of nursing homes in seven states in the U. S., a case-mix classification system was developed. The Resource Utilization Group Version III (RUG III) achieves 55.5% variance explanation of the nursing and therapy per diem
costs and is clinically valid. The RUG III is being implemented for nursing home payment in 11 states in the U. S.


Nursing facilities are required by regulation to meet minimum nursing standards. Facilities must have sufficient nursing staff to provide nursing and related services to attain or maintain the highest practicable physical, mental and psychosocial well being of residents. Facilities must also provide sufficient numbers of licensed nursing personnel to provide care on a 24-hour basis to all residents in accordance with resident care plans.

Facilities must also use the services of a registered nurse for at least 8 consecutive hours a day, 7 days a week except when they have been given a waiver. A Medicare only skilled nursing facility may have a waiver it is located in a rural area and has one registered nurse on duty 40 hours a week. Waivers are granted where there are shortages of appropriate personnel and health and safety is not jeopardized. Staffing levels are different for mixed Medicare and Medicaid and for Medicare only facilities. Medicare only facilities – have traditionally had higher staffing ratios and are located in hospitals and have residents with higher acuity levels and thus have more RNs to provide care.

Mixed Medicare/Medicaid – 1998 average RN hours 0.6 hrs per resident day= 36 minutes per resident day. Average LPN/LVN is 0.6 hours per resident day. Nursing Aide/Assistant – 1.9-2.0 hours per resident day. Overall Licensed Nursing hours is 0.9-1.2 hours per resident day (based on payroll and not actual hours of care delivered).

Medicare only beds – average RN hours per resident day 2.2 hours per resident in 1998. LPN/LVN 1.3 hours per resident day and an average of 2.5 hours for NA per resident day.
Total nursing hours (RNs, LPN/LVN) per resident day was 3.0 – 3.5 hours per resident day over the 1991-1998 time frame.


Based on an expert panel discussion, the authors present the recommendations from a one-day conference. Experts recommended 4.55 total hours of care per resident day (administrative and direct care). One fulltime Registered Nurse (RN) director of nursing in every nursing home and a fulltime assistant director of nursing for facilities with 100 or more beds to provide leadership and administration for complex nursing services. In addition, at least one RN nursing supervisor – on duty for each shift 24 hours per day, 7 days per week in each nursing home due to the requirements of residents for complex nursing care. Other recommendations included the shift away from the current use of nursing assistants as the primary direct caregivers. At least 14 minutes of the total 2.93 hours of direct resident care per day should be given by RNs or LPN/LVNs.


The authors conducted three field tests of the various versions of the MDS. The results of these field tests were presented. The results of the studies indicated that the MDS supports the clinical decision making of nursing home staff and facilitates problem identification, care planning and problem resolution. The MDS is useful as a clinical and research instrument given the reliability and clinical validity of the instrument. The mandatory assessment protocols generate MDS data that can be used for a variety of purposes including facility planning, management, quality assurance and program evaluation.

The Minimum Data Set 2.0 (MDS) is a tool to classify patients in all chronic care beds in Ontario and the residents of homes for the aged and nursing homes are classified under the Alberta Resident Classification System (ARCS). The author presents a crosswalk algorithm to compute the ARCS levels of care based on clinical items from the MDS. He suggests that this algorithm may be used to support a transitional approach to move to a funding system for long-term care based on the Resource Utilization Groups (RUGS III).


This article describes a pilot study conducted in Ontario to evaluate the effectiveness of three classification systems. These included RUGS III and the Alberta Resident Classification System. Both these systems summarize the characteristics of chronic care and rehabilitation patient populations differently. They also measure different aspects of patient resource requirements.

This report was prepared to provide a current description and reference framework of the structure and components of Continuing Care in all provinces and territories. Six provinces and one territory (BC, Alberta, Manitoba, Nova Scotia, PEI, Newfoundland and the Northwest Territories) use the term Continuing Care to describe the care services for the elderly and disabled. The term Long Term Care is used as an overall umbrella term in Ontario and New Brunswick, while Saskatchewan uses the term Supportive Services. Saskatchewan, Manitoba, Quebec, Nova Scotia and PEI use the term Long Term Care to describe facility care while BC, Ontario, New Brunswick and Newfoundland use the term Long Term Care descriptively but generally use the facility type i.e. nursing home. The Yukon, Alberta Health and the Capital Health Authority in Edmonton use the term Continuing Care to refer to facility services.

Home Care is referred to as a professional home based service for care in seven provinces. British Columbia uses the actual names of the nursing and rehabilitative services provided in the home. Saskatchewan uses the term Home Based Services. Seven provinces have developed relatively single entry systems. Other jurisdictions have partial single entry systems that cover many but not all of the services typically included in Continuing Care (Ontario) or they have parallel systems for facility care and Home Care (Yukon, Quebec and Nova Scotia).


In Ohio, there has been an increase in the provision of rehabilitation services to residents in nursing homes. Occupational therapy followed by physical therapy are the two services that have been received. Rehabilitation care is most cost effective in traditional skilled nursing facilities than in an acute-level hospital rehabilitation unit or in a sub acute hospital unit.

Issues regarding the use of the Alberta Patient Classification System (APCS) in Ontario are presented. Several operational definitions are presented including the classification of patients by level of need, type of care, diagnosis, program or location. Resource requirements were defined as all labour and supplies required to provide care and support services to patients.

The APCS was developed in Alberta and the authors contend that its applicability in the province of Ontario must be questioned given that Ontario chronic care facilities provide a wide range of rehabilitative services, the needs of Ontario chronic care residents may be very different than those of Alberta facilities, the age specific programs and system specific programs in continuing care for Ontario residents, issues in the provision/definition/measurement of indirect care, diversity of long term care services in Ontario and other factors that are not reflected in the APCS.

The report describes the nursing home trends between 1987 and 1996. Nursing Home – is defined as having at least three beds and being either certified by Medicare or Medicaid or licensed by a government agency as a nursing home and providing 24 – hour skilled nursing home care. Nursing homes serve only a minority of the functionally impaired elderly, but nursing home care dominates long term care financing. Nursing home occupancy rates have fallen from 1987 and may suggest that the elderly long term care needs are increasingly being met outside of the nursing homes.

Nursing homes are increasing the levels of resources for specialized treatment needs of specific populations.

- Nursing home population is frailer and needs more skilled and/or specialized care than in 1987.
- Shorter length of stay in hospitals has resulted in a greater need for skilled and rehabilitative care following hospitalization.
- Increased awareness and increased interest in programs for Alzheimer’s disease and related dementias – leading to specialized units.

Nursing home residents were more functionally disabled in 1996 than in 1987.

**Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes, Report to Congress**

There are considerable variations in staffing levels across the United States. In 1998, staffing ranged from 2.61 total hours per resident day for Oklahoma facilities to 4 hours per resident day in Alaska, Delaware, Hawaii and Idaho.

Variations in staffing levels could be attributed to differences in resident case mix, Medicaid reimbursement levels, labour market conditions (wage rates and availability of staff), differences in practice patterns (e.g. the use of non-nursing staff), differences in State staffing requirements or differences in quality of care.
The ‘for profit’ facilities have lower mean staffing levels than not for profit/government facilities.

*Note: All nursing homes that are certified to receive payment under Medicare or Medicaid must meet minimum Federal nurse staffing requirements and some States have imposed more specific requirements under their licensure authority.*

Direct Care staffing accounts for typically 65-80% of a facility’s total expenditures. Direct care staff defined as RNs, LPN or LVNs and Certified Nursing Assistants. Staffing levels (hours of direct/indirect care provided by staffing role) are most commonly expressed in terms of “per patient day”. Facilities determine staffing levels based on a measure of acuity/resident needs expressed as nursing hours per patient day.

U.S nursing facilities face a number of recruitment and retention obstacles that may have affects on staffing levels. High rates of turnover have been reported for Certified Nursing Assistants, RNs and LPN/LVN.


The article describes the development and application of a Scottish health resource utilization group (SHRUG) to determine resource use for hospitals or nursing homes that provide long term care. Data was collected on 2783 patients in continuing care in hospitals in 10 areas in Scotland. The cost data related to nursing care and found that the SHRUG case mix groups accounted for 35% of the variation in costs. The authors concluded that resource utilization group methods have good potential for describing individuals receiving care in long-stay but not acute or rehabilitation wards in the UK.

Selected Literature Review
A review of dementia-related studies conducted in Sweden show conflicting results. In one community based study done in Stockholm, of 1248 people examined who were age 85 and older, *clinically definite* dementia was found in 28.6% of the study population and a further 8.1% of *questionable* cases of dementia were identified. This study also concludes that the incidence and prevalence of dementia is increasing. (Archive of Neurology, 1999 56(5): 587-92. von Strauss, E.; Viitanen, M.; De Ronchi, D.; Winblad, B.; Fratiglioni, L. Aging and the occurrence of dementia: findings from a population based cohort with a large sample of nonagenarians.) In another study, it was found that the overall mean annual incidence rate of clinically relevant dementia was 295/100,000 and the overall mean prevalence rate was 755/100,000 persons (Andreason, N.; Blennow, K.; Sjodin; Winblad.; Svardsudd, K., 1999 18(3): 144-55. Prevalence and incidence of clinically diagnosed memory impairments in a geographically defined general population in Sweden. The Pitea Dementia Project.)

In a study of 350 patients aged 70 or greater seen in a primary health care center, dementia was found in 19.4 % of the study population while another study examining 191 patients living in nursing homes found that dementia occurred in 72% of the study population. (Olafsdottir, M.; Skoog, I.; Marcussen, J. 2000 11(4): 223-9. Dementia and Geriatric Cognitive Disorders. Detection of dementia in primary care: The Linkoping Study. Andersson, M.; Gottfries, C.G 1992 4(2): 241-52. Dementia syndromes in nursing home patients. International Psychogeriatrics.

Finally, a 1985 study of individuals aged 70 and over (n=384) living in nursing homes found that 36% of this population were severely demented and 62% were severely confused. (Dehlin, O.; Franzen, M.; 1985 3(4) : 215-22. Prevalence of dementia syndromes of persons living in homes for the elderly and in nursing homes in southern Sweden. Scandinavian Journal of Primary Health Care.)