

Nursing home resident assessment and case-mix classification: Cross-national perspectives

by Steven B. Clauser and Brant E. Fries

Two broadly applied systems in the United States, the National Resident Assessment Instrument/Minimum Data Set and the Resource Utilization Groups, have provided new insight into the quality, delivery, and financing of nursing home care. In this article, the authors describe research efforts in eight other nations

to translate, validate, and use one or both systems to understand their own long-term care systems. This consortium of studies, using common instruments, provides potential cross-national analyses that capitalize on differences in practice patterns and system designs to address critical policy issues.

Introduction

As major reforms in hospital prospective payment were successfully implemented in the U.S. Medicare program in the mid-1980s, attention turned to reform for other providers that were still being paid by Medicare on a retrospective cost basis. Nursing home payment reform presented an especially challenging area, given the significant differences in the structure and regulation of nursing homes in States across the country. In addition, policy development was complicated by controversies over the quality of care provided nursing home residents in the United States. Still further complicating this situation was the lack of common data and classification systems to describe and measure nursing home performance in terms of the characteristics of residents cared for in facilities, their relative use of staff and other resources, and their clinical and functional outcomes.

Since 1981, the Health Care Financing Administration (HCFA) has sponsored a number of initiatives to examine policy reform in the nursing home industry. Two of these initiatives—the Resident Assessment Instrument (RAI) Minimum Data Set (MDS) and the Resource Utilization Groups (RUGs)—are at the core of programmatic and experimental efforts to reform nursing home policy in the United States. For the first time, these systems provide a national and unified methodology to describe and classify nursing homes according to resident case mix and resource use, which enables prospective pricing methodologies to be linked to a case-mix classification system. These initiatives also help establish systems for monitoring the quality of nursing home care based on periodic resident assessment data, claims data, and onsite surveillance visits that reflect national and State norms for acceptable treatment and resident outcomes.

Even though national applications of the RAI and RUGs are in the early stages of implementation and have not yet been extensively evaluated (as have, for example, diagnosis-related groups [DRGs] for hospital care) substantial interest has been expressed by

international organizations in the application of these technologies to other countries. A major focus of this work is to determine whether the concepts, development methods, and structures of the RAI and RUGs are transferrable to other health care systems and cultures, especially given the diverse role nursing homes play in long-term care service delivery in different countries. In this article, we describe current initiatives in the United States, Europe, Asia, and Australia, to validate the RAI and RUGs and to explore the potential for these systems to aid in cross-national comparative policy research.

In the next section, we briefly describe the RAI and RUGs and their development and use in the United States. The applications of these technologies in Europe, Asia, and Australia are reviewed. The resulting data and validations are then used in an example to contrast characteristics of the institutionalized elderly in four disparate nations: Sweden, Italy, Japan, and the United States. We conclude with suggestions for areas of considerable promise for further cross-national policy research.

U.S. assessment and case-mix systems

In the past decade, there has been considerable effort in the United States to develop better methods of understanding the types of residents in nursing homes. These efforts were initially aimed at improving our understanding of the cost differences between nursing homes. It quickly became clear that facilities varied in the range and distribution of types of residents for whom they cared and that a method for relating resident characteristics to resource use was central to understanding underlying differences in the cost structures of nursing homes. Moreover, with the successful implementation of the prospective payment system (PPS) for acute care hospitals in the mid-1980s, the development of case-mix classification systems for all types of institutional providers became of immediate interest for the design of government payment systems. Systems that recognize varying care needs of patients will, all other things equal, promote more equitable provision of resources appropriate to patient needs (Fries and Cooney, 1985).

In turn, there was increasing awareness of a secondary benefit of case-mix payment: the availability of resident-level assessment information. Resident characteristics used for determining payment levels simultaneously could be used to flag quality problems, determine staffing levels, and manage facilities.

More recently in the United States, the situation has reversed. As we describe in the following section, resident assessment is now considered a key element in organizing and evaluating clinical care in nursing homes. The United States has mandated a process and data collection instrument that must be applied to all residents in nursing homes that participate in the Medicare and Medicaid programs. Thus, assessment information about individual residents is now routinely collected by virtually all U.S. nursing homes, and case-mix measurement is only one of the potential applications of these data.

We describe the results of these two major efforts in U.S. nursing homes: a resident assessment system and a resident classification system for case-mix measurement.

Developing a resident assessment instrument

In response to discovered problems and legal challenges about the quality of care in U.S. nursing homes, a report was issued by the Institute of Medicine of the National Academy of Sciences that identified resident assessment as a key component to improving this quality (Institute of Medicine, 1986). Later, the U.S. Congress in the Omnibus Budget Reconciliation Act of 1987 (Public Law 100-203) mandated a nationwide system of nursing home resident assessment. As described in section 4201 of that law, the purpose of this assessment was to develop appropriate care plans for nursing home residents. Since 1988, a consortium of research organizations (Research Triangle Institute in North Carolina, Hebrew Rehabilitation Center for the Aged in Boston, Brown University, and University of Michigan), under contract with HCFA, has developed and tested and is currently evaluating the implementation of a uniform resident assessment system—the national RAI system.

The RAI is designed to guide individualized resident care planning with two interrelated components. The first component, the MDS, contains the core items necessary for a comprehensive assessment of nursing facility residents. The RAI also provides triggers (individual items or combinations of MDS elements) to identify residents for whom specific resident assessment protocols (RAPs, which are the second part of the system) will be considered. RAPs have been developed for each of 18 major problem areas associated with nursing home residents, such as delirium, falls, communication, psychosocial well-being, and cognitive loss. Each RAP provides guidelines for the development of care plans, including suggestions for additional information needed and a state-of-the-art summary of options for care planning and service provision. By law, full assessments are performed upon admission, at least annually thereafter, and upon

significant change in the resident's status. Instruments, instructions, and training materials have all been developed and widely distributed by public and private sources (Morris et al., 1991).

The core of the RAI is the MDS, a broad assessment instrument with more than 300 individual items that not only describes the nursing needs of residents but also incorporates measures of residents' strengths and psychosocial needs. The development of the MDS included extensive testing, dozens of major drafts, and broad input from hundreds of clinicians, administrators, regulators, industry representatives, and consumer advocates. Considerable attention was placed on the specification of timeframes, exclusions or delimiters (e.g., score how a resident eats, regardless of skill), and examples. Multistate testing of an early version of the MDS showed acceptable reliability (Morris et al., 1990). More recently, the final instrument has demonstrated substantially improved reliability (Hawes et al., to be published). (The final instrument and the MDS quarterly review are provided in Figure 4 at the end of this article.)

Current work focuses on the creation of summary scales representing major dimensions of resident status (e.g., cognitive impairment [Morris et al., to be published] mood state, behavior problems, and physical functioning) and indicators of quality of care. These scales are being measured on both cross-sectional and longitudinal data and will consider both process and outcome measures of quality of care. These data are increasingly being applied as well to policy analysis, such as the cost of physical restraints (Hawes, Phillips, and Fries, to be published).

The RAI has been mandated for use in all U.S. nursing homes that qualify for Federal payments—virtually all of the approximately 16,000 nursing homes nationwide—with implementation completed by April 1992. We estimate that approximately 3 million assessments will be performed each year. The implementation of a national system of resident assessment information based on the MDS will be a complex process that will take many years to complete. In the meantime, several States and a major HCFA-sponsored demonstration project on nursing home case-mix payment (described later) have already begun to centralize data collection at the State level, which will result in large-scale, representative data bases being available in the near future.

Developing case-mix systems

Over the past two decades, there have been many systems developed to measure case mix (specifically, the characteristics of residents related to their resource use) in nursing homes (Fries and Cooney, 1985; Cameron, 1985; Arling et al., 1987; Weissert et al., 1983; Winn, 1975; Fries et al., 1989; Morris et al., 1987). Case-mix measurement in health care facilities was first used in hospitals (most notably, DRGs) (Fetter et al., 1991). When applied to nursing homes, however, several changes to case-mix measurement were necessary. First, although DRGs explain the cost of an entire hospital

stay, usually via the proxy of length of stay, in nursing homes the variability of length of stay (and thereby episode cost) is too great to be practical for payment system design. Thus, nursing home case-mix systems generally focus on explaining daily resource use. Technically, measuring actual per diem resource use at the level of the individual resident adds significantly to the complexity of these systems. Such a per diem system manifests other nursing home differences. As with any health care system, residents' clinical and functional status changes over time. With a per diem system used for payment determination, residents need to be reassessed to keep payments accurate and fair; there are intrinsic opportunities to manipulate resident characteristics appropriately (e.g., responding to policy incentives) or inappropriately (e.g., "gaming").

A second major difference is that, unlike acute hospital care, for which the patient's clinical diagnosis is the major determinant of resource use, residents' functional status and major physical conditions are at the core of explaining resource use in nursing homes. A number of studies have emphasized the importance of functional abilities in explaining the cost of care and have shown little or no link between the clinical diagnosis and the resources used in caring for nursing home residents. Virtually all studies have found that Katz' index based on activities of daily living (ADLs, including ability to dress, bathe, eat, toilet, transfer, and walk) are critical determinants of the time and cost of caring for nursing home residents (Katz et al., 1963; Swearington, 1978; Fries and Cooney, 1985).

A series of efforts, funded by HCFA, have developed case-mix resident classification systems for nursing homes (RUGs), which have achieved substantial application in the United States. The goal of RUGs is to group nursing home residents by resident characteristics so as to explain resource use. The RUG-II classification system was developed specifically for use in the Medicaid case-mix payment system for New York State nursing homes, where it has been in operation since January 1986 (Schneider et al., 1988). In addition to its application there, paying close to \$3.25 billion annually, the RUG-II system has also been used for resource allocation among the Department of Veterans Affairs Medical Centers, and a derivation is incorporated into the approximately \$1 billion Medicaid nursing home payment system in the State of Texas.

As part of a major HCFA multistate demonstration of nursing home case-mix payment and quality, a new version of RUGs—RUG-III—has just been completed (Fries et al., to be published). Derived in a similar manner, RUG-III improves upon the mid-1980s RUG-II version by identifying better measurements for cognitive impairment, additional ADLs, and "high-tech" residents, such as those who must be fed parenterally or who are on ventilators. RUG-III also updates the RUGs to reflect current clinical practice. A major advantage is that RUG-III is based primarily on data elements available in the MDS. A few items need to be added, principally to document services provided (such as nursing rehabilitation); these items were

excluded from the MDS because they were considered to be not critical to the planning of care.

RUG-III was derived from a specially collected data base of 7,658 residents in 203 nursing homes in seven States. All facilities in the stratified sample were screened to meet acceptable federally defined quality of care standards; a case-mix system based on resident care patterns in substandard facilities would be of little use. Data of two types were involved: measures of resource use and of resident characteristics. Resource use was collected by self-reporting of staff (nurses, aides, therapists, social workers, etc.) of the total time they spent over a 24-hour period caring for each resident, including time directly provided in care, or indirectly provided through interactions with other staff, physicians, family, and others that benefited the resident. We have developed and validated a variety of techniques to ensure accurate measurement data. Over the past 8 years, these techniques have been replicated with considerable success in seven studies with large samples of patients. In nursing homes, the cost of staff represents almost all of the costs that vary by residents. Other costs associated with operating the nursing home are either fixed over all residents (e.g., capital costs, facility maintenance), highly related to staff time (e.g., pharmacy costs), or relatively small (e.g., minor supplies). Thus, we developed wage-weighted staff times as our resource measure to be used as a dependent variable. These weights acknowledged the differences in cost of care provided by a registered nurse or a nurse aide, for example. The classification system structures, however, are reasonably insensitive to changes in these weights.

The second type of data provided the independent variables to define the classification groups. Resident characteristics were assessed using an early version of the MDS. Thus, we had information on resident demographics, medical conditions, diagnoses, mental functioning, ADLs, behavior problems, and services provided. The RUG-III development addressed three major types of criteria: statistical, clinical, and administrative. The statistical criteria included measures of the cost homogeneity of the groups as well as how well the system explained resource use. Based on a study of the total cost of resident care in the combined 7-State sample, the RUG-III system of 44 groups explained 55.5 percent of the variation among individual residents in 24-hour resource cost, with groups that were relatively homogeneous (i.e., with low coefficients of variation). (For comparison purposes, the DRG system, with 10 times as many groups, when applied to all patients in acute care hospitals, has a variance reduction of 26-40 percent, depending on which components of cost are included; however, we caution against the direct comparison of these numbers because, as described earlier, the RUG system measures nursing home per diem resource costs and the DRG system measures hospital episode costs.) When facility or unit identifiers were added as covariates to the model, the RUG-III variance explanations increased to 68 percent and 71 percent, respectively. The clinical criteria assured that the RUG groupings made sense to

Table 1
RUG-III activities of daily living (ADL) index

ADL variable	Score
Bed mobility, toilet use, and transfer:	
Independent or supervision	1
Limited assistance	3
Extensive assistance or total dependence:	
Other than 2-person physical assist	4
2 or more persons physical assist	5
Eating:	
Independent or supervision	1
Limited assistance	2
Extensive assistance or total dependence	3

NOTES: RUG-III is Resource Utilization Groups, Version III. Scores are summed for four ADL variables. Index ranges from 4 to 18. The individual variables are subject to time and other delimiters, as specified in the Minimum Data Set, which should be used to define the individual resident characteristics listed here.

SOURCE: (University of Michigan and Rensselaer Polytechnic Institute, 1992).

practitioners—that they could “visualize” their patients. Finally, care was taken to use patient characteristics that could reliably be assessed or audited, which would reduce the possibility of nursing homes classifying residents into more expensive categories with little change in the actual cost of resources used (“gaming”), and which would provide incentives for appropriate care.

The RUG-III system incorporates up to three dimensions in describing a resident. The first dimension indicates one of seven major types of nursing home residents. The second dimension is an ADL index, a summary measure of functional capability, produced by combining four ADL measures (toileting, eating, bed-to-chair transfer, and bed mobility). Although ADLs are the most effective measures in explaining resource use, they demonstrate even greater statistical power within defined major types of residents. Also, four ADLs are sufficient; additional ADLs provide little marginal information about resource use. The final dimension describes particular services (such as nursing rehabilitation) or problems (such as resident depression).

The complete RUG-III system is illustrated in Figure 1. Using the definitions in Figures 2 and 3 and the ADL index provided in Table 1, residents are placed into only 1 of 44 RUG-III groups. RUG-III has seven hierarchy categories (special rehabilitation, extensive care, special care, clinically complex, impaired cognition, behavioral problems, and reduced physical functions), describing types of residents in decreasing order of resource use. Assignment to the special rehabilitation category and four subcategories is based on the amount of therapy resources (staff time) provided to the resident, with further splits based on ADL scores. For the next most resource-intensive categories, extensive service and special care, resident assignment is based on the receipt of certain significant services (parenteral feeding, tracheotomy, suctioning, or ventilator care) or the presence of certain clinical conditions (e.g., quadriplegia, stage three or four pressure ulcers, coma), respectively. Additional splits of these categories are based on the number of extensive

treatments or ADL level. Assignment to the clinically complex category is based on the presence of conditions such as aphasia, hemiplegia, or terminal illness, or on the receipt of services such as dialysis or chemotherapy. The rare resident in the extensive or special care categories with almost complete ADL functioning (an ADL index score of less than seven) is also included here. The clinically complex category has secondary splits based on ADL and a tertiary split according to the presence of symptoms of depression or sad mood. Residents with characteristics of cognitive impairment and residents without such characteristics but who daily have behavior problems including wandering, physical or verbal abuse, regressive behavior, or hallucinations, are assigned to the impaired cognition and behavior categories, respectively. These two categories are restricted to residents with ADL index scores of 10 or less. Residents who do not meet the criteria of any of the earlier categories are assigned to the reduced physical functions category. These last three categories—impaired cognition, behavior problems, and reduced physical functions—are split by ADL and finally by the presence of nursing rehabilitation activities. The RUG-III groups represented a tenfold range in our measure of the variable cost to the facility of caregiving resources.

The RUG-III system is scheduled to be implemented and evaluated in six States as part of the HCFA-sponsored nursing home case-mix and quality (NHCMQ) demonstration project. Kansas, South Dakota, Mississippi, and Maine will implement the RUG-III system as part of nursing home case-mix payment systems for both Medicare and Medicaid. New York and Texas, which already pay nursing homes under Medicaid on the basis of the RUG system, will implement RUG-III for the Medicare portion of the demonstration. The NHCMQ demonstration is scheduled for implementation in the summer of 1993 and will operate for 3 years. HCFA is planning to sponsor an independent evaluation to measure the demonstration's impact on the cost, access to and quality of nursing home care. Because no other nursing home case-mix payment system has been implemented in more than one State or has been subject to such intensive independent evaluation, we believe that RUG-III will become the state of the art in nursing home case-mix classification.

International applications

The development and adoption by the U.S. Government of the RAI and MDS as the national system for resident assessment and care planning in nursing homes has been an important factor in focusing international interest on developing uniform data systems for measuring the clinical and functional characteristics of nursing home residents. The parallel development of RUGs has provided a tool for other countries to measure case mix and to facilitate understanding of the similarities and differences in nursing homes residents and services within nations.

Figure 1
Resource Utilization Groups, Version III (RUG-III) classification system

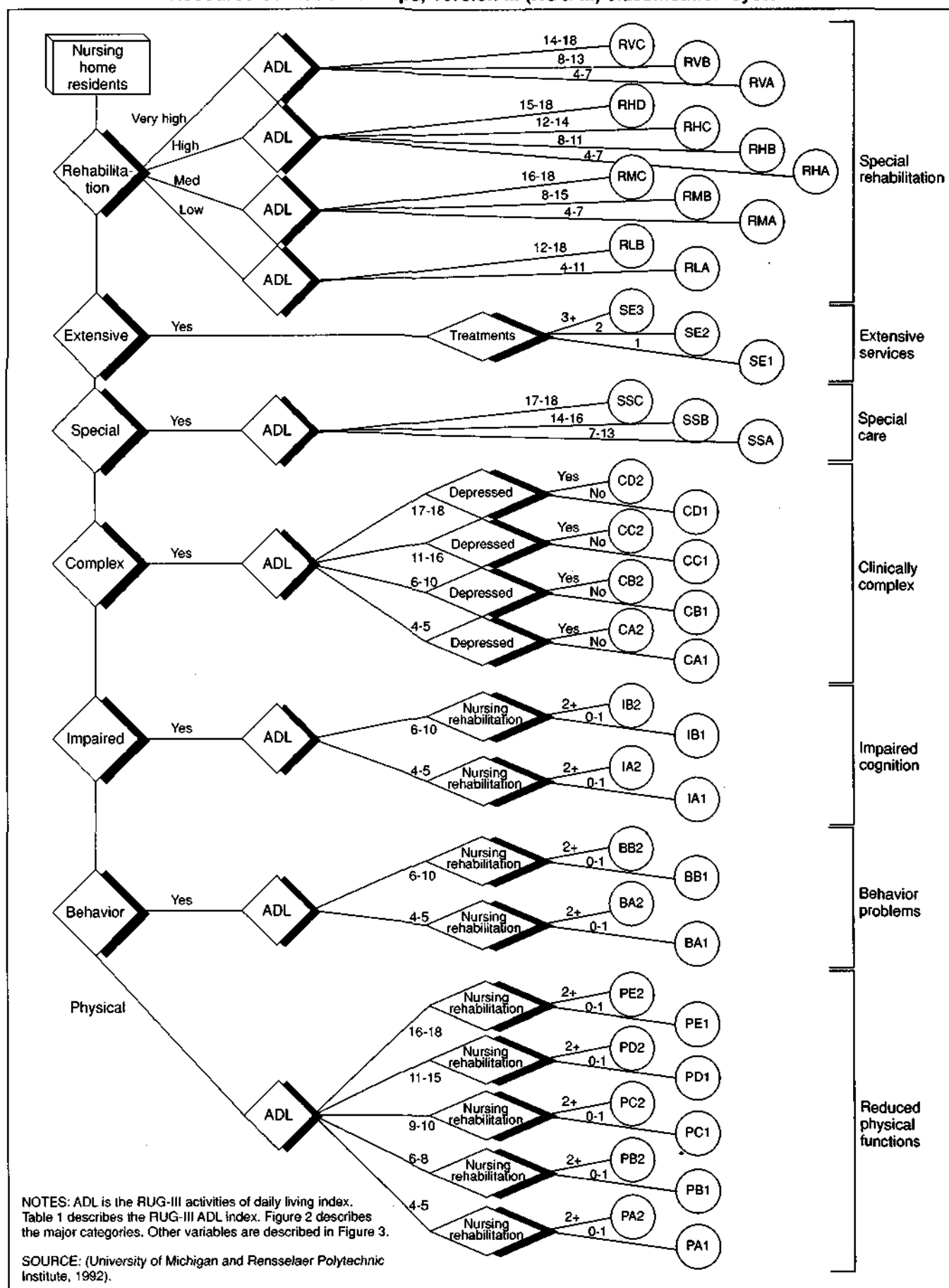


Figure 2
Resource Utilization Groups, Version III (RUG-III) hierarchy categories¹

Special rehabilitation—Rehabilitation therapy is any combination of physical, occupational, or speech therapy. Residents meeting the criteria for any of the four subcategories listed below are classified into this major category.

Very high intensity multidisciplinary rehabilitation:
450 minutes or more of rehabilitation therapy,
at least 5 days per week of one type of therapy, and
at least two of the three therapies provided.

High intensity rehabilitation:
300 minutes or more of rehabilitation therapy per week, and
at least 5 days per week of one type of therapy.

Medium intensity rehabilitation:
150 minutes or more of rehabilitation therapy per week, and
at least 5 days per week of rehabilitation therapy.

Low intensity rehabilitation:
45 minutes or more of rehabilitation therapy per week,
at least 3 days per week of rehabilitation therapy, and
at least two types of nursing rehabilitation occurring at least 5 days
per week (Figure 3).

Extensive services—Residents who have a RUG-III ADL index score of at least 7 and who meet at least one of the following criteria:

- Parenteral feeding.
- Suctioning.
- Tracheostomy.
- Ventilator/respirator.

Special care—Residents who have a RUG-III ADL index score of at least 7 and who meet at least one of the following criteria:

- Burns.
- Coma.
- Fever, with vomiting, weight loss, pneumonia, or dehydration.
- Multiple sclerosis.
- Pressure ulcers of stage 3 or 4.
- Quadriplegia.
- Septicemia.
- Intravenous medications.
- Radiation treatment.
- Tube feeding.

Clinically complex—Residents who meet at least one of the following criteria:

- Aphasia.
- Aspirations.
- Cerebral palsy.
- Dehydration.
- Hemiplegia.
- Internal bleeding.
- Pneumonia.
- Stasis ulcer.
- Terminal illness.
- Urinary tract infection.
- Chemotherapy.
- Dialysis.
- Four or more physician visits per month.
- Respiratory or oxygen therapy.
- Transfusions.
- Wound care other than pressure ulcer care, including active foot care dressings.

Or;
residents who meet the criteria for the extensive services or special care categories but who have a RUG-III ADL index score of 4 to 6.

Impaired cognition—Residents with a RUG-III ADL index score of 4 to 10 who have cognitive impairment in all three of the following dimensions:

- Decisionmaking (not independent).
- Orientation (any problem recalling current season, location of own room, staff names or faces, or that he/she is in a nursing home).
- Short-term memory.

Behavior problems—Only residents with a RUG-III ADL index score of 4 to 10 are classified in this category. Residents who display daily problems with:

- Inappropriate behavior.
 - Physical abuse.
 - Verbal abuse.
 - Wandering.
- Or with:
- Hallucinations.

Reduced physical functions—Residents who do not meet the conditions of any of the earlier categories, including those who would meet the criteria for the impaired cognition or behavior problems categories but have a RUG-III ADL index of more than 10.

¹The individual variables are subject to time and other delimiters, as specified in the Minimum Data Set which should be used to define the individual resident characteristics listed here.

SOURCE: (University of Michigan and Rensselaer Polytechnic Institute, 1992).

The international interest in technologies to understand long-term care in advanced industrialized nations has been initiated by government officials, by international organizations such as the World Health Organization, and by academic researchers. The expression of interest by policymakers is not surprising. The most notable social and economic trends of the past century—increases in national wealth, rising real incomes, increasing personal consumption, and substantial investments in health and social welfare

programs—have led directly to the growth of the population age 65 and over in advanced industrialized nations. A secondary demographic trend, less well recognized and reported, is the rapid growth in the number of individuals age 80 and over in these societies. Projections indicate that, between 1990 and 2030, the absolute numbers of individuals age 80 and over will increase by up to 50 percent in Germany, Belgium, Denmark, Norway, the United Kingdom, and Sweden; between 50 and 100 percent in Italy and the

Figure 3
Other variables¹ used in Resource Utilization Groups, Version III (RUG-III)

Extensive treatment count—A count of extensive treatments is used to identify RUG-III groups in the extensive services category. This count is the number of the following criteria:

- Parenteral feeding.
- Tracheostomy.
- Suctioning.
- Ventilator/respirator.

Depressed mood (sad)—Signs and symptoms of a depressed or sad mood are used as a tertiary split for the clinically complex category. Residents with a depressed or sad mood are identified by the presence of a combination of symptoms, as follows:

Persistent sad or anxious mood and at least two other symptoms of the following list of five:

- Expressions of distress.
- Agitation or withdrawal.
- Early awakening with unpleasant mood or awake 7 hours or less a day.
- Thoughts of death or suicidal thoughts.
- Weight loss.

Alternately, a resident is identified as depressed if a diagnosis of depression or bipolar disease and at least one from the above list of five symptoms is present.

Nursing rehabilitation—Nursing rehabilitation activities are used as a tertiary split for the impaired cognition, behavior problems, and reduced physical functions categories. When used in the special rehabilitation category, "toileting program" is omitted as a qualifying activity. A count of two or more of the following activities occurring at least 5 days a week places an individual in the higher resource use category or group:

- Amputation care.²
- Active range of motion.
- Passive range of motion.
- Splint/brace assistance.
- Training in:
 - Dressing/grooming.
 - Eating/swallowing.
 - Locomotion/mobility.
 - Transfer.
- Any toileting program (not used for defining low intensity rehabilitation category).

¹The individual variables are subject to time and other delimiters, as specified in the Minimum Data Set (MDS), which should be used to define the individual resident characteristics listed here.

²Amputation care was not on the original version of the MDS used. As it is now part of MDS, based on clinical input, it was added here.

SOURCE: (University of Michigan and Rensselaer Polytechnic Institute, 1992).

the funding base for health and social services, given the rapid increases in disability and the equally rapid increases in the use of health and personal care services after age 75, and particularly after age 80 (Organization for Economic Cooperation and Development, 1988). Much of the policy concern in meeting the continuing care requirements of the frail elderly has centered on the provision of institutional long-term care in hospitals, nursing homes, and other residential care settings. Institutional care is often the most expensive form of long-term care, and its role relative to in-home and community-based services is not well understood in addressing financing issues for long-term care.

Several analysts have attempted to measure the extent to which the frail elderly in different countries receive long-term care in institutional settings and to document expenditure differences as a result of this variation. Of interest in these studies of relatively industrialized countries is not only the absolute rate of institutionalization (ranging from 5.5 percent in the United States to nearly 11 percent in the Netherlands), but also the variation in institutional rates by area within countries. This latter variation is apparently as great, if not greater, than that between these countries. Institutional expenditure differences, to the extent documentable, also vary widely. Few, if any, of these variations can be attributed to age structure alone (Doty, 1988). As we discuss later, there is also considerable variation in the types of institutions providing long-term care, which complicates these comparisons.

The range in rates of institutionalization suggests that significant variations in the use and costs of institutional services by the frail elderly should be amenable to policy intervention. However, most international studies of these issues are single-nation studies or descriptive comparative case studies. Serious national and international examination of these issues has been limited for a variety of reasons, but a widely acknowledged impediment has been the lack of consensus on the definition of a long-term care institution. For example, in the United States alone, more than 50 designations have been used by States in licensing facilities commonly identified as providing long-term care, including: swing-bed hospitals; nursing homes; skilled nursing, intermediate care, extended care, or subacute care facilities; personal care homes; adult foster care facilities, and rehabilitation hospitals (National Center for Health Services Research, 1985). Other countries exhibit similar variation in the types of institutions that care for the frail elderly. Attempts to classify and compare the performance of facilities based on their structural characteristics have been extremely difficult, because the systems in which these facilities operate vary across States and international boundaries. In the United States, perhaps as well as in other countries, structural characteristics have proven to be poor predictors of costs and quality of care. This makes aggregate statistics that compare long-term care costs, beds per 1,000 elderly, or rates of institutionalization very difficult to interpret.

Netherlands; 200 percent in Japan and the United States; and more than 200 percent in Australia and Canada. In several countries, notably Australia, Canada, and Japan, much of this growth will occur over the next 20 years (Organization for Economic Cooperation and Development, 1988).

Population increases on this scale present significant new policy challenges for these countries in maintaining

Although the name of a type of institution, e.g., "nursing home," has been demonstrated not to be equivalent across or even within nations, we believe that comparisons are valid when performed at the level of the individual resident (Fries et al., 1991). For example, if we find nursing homes in one country to be twice as expensive as in another country, we are not necessarily better informed. Does the disparity in costs reflect a significant difference in resource inputs, or practice patterns, or is it a byproduct of differing health care systems that place different types of patients in nursing homes? However, if between these two countries there is a difference in costs for a particular type of resident, then we have the basis for defining and contrasting nursing homes based on a variety of policy dimensions (including cost differences) by comparing their resident populations and resource inputs.

Specific national initiatives

These observations have generated multinational interest in the use of common technologies to describe long-term care. There are currently researchers in at least eight countries (in addition to the United States) experimenting with the RAI or RUGs. For example, the MDS has already been translated into French, Swedish, Danish, Italian, German, and (in part) Japanese. The Italian and French translations have included the entire RAI, with RAPs. We discuss here the current status of the eight cooperating national projects: in Denmark, Sweden, Italy, Japan, England and Wales, Netherlands, Australia, and Switzerland.¹ Other nations in which coordinating projects are being considered include France, Spain, Germany, Mexico, Scotland, Norway, Austria, and New Zealand.

Denmark

A study being pursued by clinical researchers at the Kommunehospital in Copenhagen will use a Danish translation of the MDS to assess all residents in the 58 nursing homes and 3 geriatric hospitals of Copenhagen for an 8-month period beginning October 1, 1992. In total, an estimated 5,300 assessments will be performed by nurses trained by the project staff. This effort is directed by clinicians and long-term care providers in the Copenhagen area as an attempt to improve care planning and clinical practice in long-term care settings. After 1 year of data collection and use of the MDS, the effectiveness of the system will be evaluated and, if successful, the MDS will continue to be used as the common assessment system for long-term care residents in all nursing homes and geriatric hospitals in the Copenhagen area.

¹Project leaders in the several collaborating nations include: Drs. Roberto Bernabei (Rome, Italy), G. Iain Carpenter (Winchester, Great Britain), Jean-Noël DuPasquier (Geneva, Switzerland), Dinnus Frijters and Cora van der Kooij (Utrecht, Netherlands), Naoki Ikegami (Tokyo, Japan), Gunnar Ljunggren (Stockholm, Sweden), Marianne Schroll (Copenhagen, Denmark), and Malgosia Zlobicki (Brisbane, Australia).

Sweden

In contrast, the government of Sweden has supported research on RUGs in Swedish nursing homes and geriatric hospitals since 1987. Researchers at the Karolinska Institute in Stockholm have performed a number of studies, primarily validating and using the RUGs (Ljunggren, Fries, and Winblad, 1992), as we describe briefly in the following section. Currently, researchers are collecting full MDS assessments or the subset of items necessary for RUG-III classification on an estimated 1,000 residents in nursing homes and geriatric hospitals in and around Stockholm. The purpose of this latest data collection is to pilot the use of the MDS, assess its use for facility payment and management, and demonstrate its potential to differentiate nursing home populations and predict lengths of stay. During the past year, control of nursing homes has passed from the county councils to the municipalities, some of which are exploring the use of RUGs to assist them with their new regulatory and financing role for institutional long-term care.

Italy

A group of physicians in the Geriatric Department of the Università Cattolica del Sacro Cuore of Rome have translated the entire RAI, both MDS and RAPs. They are using it as the core of a 4-month training program for registered nurses who will work in nursing homes. To date, the program has involved 2 cohorts of 20 nurses each. Italy is just beginning a rapid expansion of nursing home beds to assist in the movement of the frail elderly out of hospitals and into lower levels of care. As a result, there is strong interest in several Italian regions (the jurisdictional level that either directly manages or finances nursing home care) to implement the RUG-III system. It is the hope that RUG-III will make it possible to understand the types of residents cared for, determine financing levels, and encourage the use of the RAI for care planning. The full RAI system will be implemented in eight nursing homes in the Emilia-Romagna and Liguria regions, with a total of almost 500 residents. This experiment will prepare for the introduction of the RAI and RUG-III in all nursing homes in these two regions.

Japan

A research group at the Keio University in Tokyo has undertaken a study to validate the RUG-III system for use in Japan. The study, supported largely through private foundation funds, has assessed patients using an instrument developed by translating those MDS items necessary for RUG-III classification. The study also collected detailed measures of facility staff time, using protocols similar to those developed in the United States. Preliminary results, based on a sample of 871 residents in 8 Tokyo nursing homes or geriatric hospital units, demonstrate that the RUG-III system is effective in explaining resource use and that variations in resource use among RUG-III groups were relatively similar to those in the United States, although

somewhat compressed. A larger sample of residents, assessed using portions of the MDS, is planned for the fall of 1992. The study will also apply the MDS to elderly living in the community; both the institutional and non-institutional samples will be tracked for 18 months.

England and Wales

Concerns over poor standards of care for nursing homes and excessively long hospital stays among the frail elderly have heightened governmental interest in long-term care policy (Royal College of Physicians, 1992). As part of this interest, the Resource Management Board of the Department of Health in Britain is currently sponsoring a major validation of the RUG-III system, led by a physician at St. Paul's Hospital in Winchester. By October 1993, full assessments and staff time measurements (again, using protocols similar to those in the United States) will be completed for 2,300 residents in 29 hospitals located in 8 health districts throughout England and Wales. A major goal of this study is to understand the applicability of the RUG-III system to post-acute care patients and determine when in a patient's stay such classification is appropriate. The RUG-III system could be used in the British National Health Service to establish and standardize level-of-care guidelines for all post-acute resource use for the elderly. A small study to test the acceptability of the MDS for nurses is also being planned.

Netherlands

Researchers in the Netherlands have been very active in examining the applicability of RUG-II to nursing home residents in their country. In June of 1990, the SIG Informaticentrum voor de Gezondheidszorg sponsored a major international conference on nursing home case-mix reimbursement, which highlighted U.S. efforts to develop the RUG-III system and issues regarding its application in other countries. A study of residents in Dutch nursing homes determined that the RUG-II system was effective in differentiating residents by resource use, but worked better for somatic nursing homes that specialize in rehabilitation, convalescence, or terminal care than for psychogeriatric facilities that specialize in the treatment of mental disorders, such as senile dementia (Frijters and Kooij, to be published). This research helped confirm our more complete treatment of dementia residents in the RUG-III classification system. Plans are under consideration for a 1993 test of the MDS and RUG-III in a pilot group of nursing homes.

Other nations

Both Australia and Switzerland are preparing for potential studies using the RAI. One hospital in Australia has been experimenting with its use and researchers at the Queensland University of Technology are planning a larger study in the Brisbane area. In

Switzerland, 15 facilities, including regular and psychogeriatric nursing homes as well as psychogeriatric hospital wards in 7 cantons, have already volunteered to conduct a 12-month test of the full RAI. The test will examine the applicability of the RAI to Swiss long-term care institutions and the cost-effectiveness of the MDS as a care planning and quality assurance tool. The test will begin in early 1993 and will involve the use of control units of residents in each facility. The project is sponsored by the 7 cantonal public health authorities.

Common themes

Several common themes are seen in these international studies. First, although the RAI and MDS are still in the early stages of testing, these instruments appear to have achieved common acceptance in clinical settings throughout Europe as well as in countries on the Pacific Rim. This has led to the use of the MDS for care planning or staff training, often employing the RAPs. Preliminary tests have shown the MDS to be relatively reliable. Thus, its assessment capabilities make it a potentially strong basis for communication, a common lexicon for nursing home residents that spans languages and cultures. With fully compatible versions in many of the major languages, there is significant potential to use the MDS as the basis for cross-national research.

Second, care needs to be taken in the translation of the MDS/RAI into other languages. In every case, the translation has been performed by a bilingual professional (and, in all but one case, a physician) particularly knowledgeable about nursing homes. Also, (except for the Italian and German versions, which are under way) we have performed a back-translation to English of every item, example, delimiter, and timeframe, with careful evaluation of differences between the two English versions. Even with this care, complications have arisen. For example, whether the resident was able to dress himself or herself was back-translated from Japanese as the ability to dress in western-style clothes. Clearly this latter is a substantially different concept, involving familiarity and ability to deal with buttons, snaps, and zippers, compared with the different complexities of Oriental dress. Moreover, most Japanese nursing home residents never wear western-style clothes. After considerable discussion, the Japanese translation was adjusted to represent the residents' ability to dress in any clothes because we determined that this ADL should reflect the resident's mental and physical capability to dress himself or herself, irrespective of clothing styles.

Third, RUG-II and RUG-III, as a summarization of assessment items to predict resources, appear to be effective in different countries despite differences in the long-term care systems. In the Swedish and Japanese validation studies previously described, RUG-II and RUG-III achieved 40-60 percent variance explanation of directly measured resource cost. Moreover, despite considerable differences in staffing and practice

patterns, the relative resource use (case-mix indexes) of groups follow a pattern similar to that in the United States.

Finally, the impetus for developing these applications of the RAI and RUGs has been relatively similar to that in the United States, with some adjustment to the particularities of the host nation. The RAI is considered for its potential to support individual residents' care planning and quality assurance, and both systems are of interest for their potential characterization of the institutional population for policy development. The RUGs are of interest initially to provide a concise summary of the types of residents seen, and eventually to establish nursing home admission policies, criteria for level-of-care determinations, and even resource allocation. For example, RUG-II was used last year to distribute additional year-end funds to Dutch nursing homes to spend on nursing staff.

An example of potential applications

In this section, we provide a single example of the type of information that can be derived from resident-specific data from multiple nations, drawing on data made available by selected projects described in the previous section. The presentation of this example is principally to demonstrate the feasibility of the analysis; extrapolation to national comparisons at this time is premature because of the preliminary nature of at least two of the samples currently available.

Earlier we suggested that the term "nursing home" was not useful in cross-national comparisons. In fact, in many nations, it may be a misnomer or may not apply to any institutional settings. Although virtually all chronic, long-term institutional care of the elderly in the United States is provided in nursing homes, this is not universally true elsewhere. In Britain, for example, the provision of long-term care is split between geriatric hospitals operated and funded by the British National Health Service and nursing homes that are largely privately owned and financed (Royal College of Physicians, 1992). Japan has three types of long-term care facilities, differentiated by the level of care provided, yet has an average hospital length of stay (excluding psychiatric beds) well in excess of 1 month. Italy is entering a period of major expansion of nursing homes, to replace the care provided in hospital settings.

Over the last few years, three national studies have developed data compatible with that in the United States to permit us to develop RUG-II case-mix classifications of representative or at least preliminary samples of institutional health care settings for the elderly. In two cases (Sweden and Japan), these data were developed as part of projects to validate the RUG systems; for Italy, they are an indirect product of preliminary application of the MDS.

The Swedish study was performed in 1987 and included 1,134 residents in long-term care facilities of Stockholm County. This represented the total population of six long-term care institutions assessed once: 1 hospital department of geriatrics (146 patients); 3 nursing homes (2 with 100 residents and 1 with 150

residents); and 2 mixed institutions (250 and 380 residents) consisting of a combination of geriatric and nursing home wards. In total, the sample represented 13 percent of all Stockholm long-term care beds in 1987. In Sweden, each long-term care organization (sometimes divided into nursing homes and geriatric departments) had a defined area-based elderly population for which it was solely responsible, and the residents it cared for represented all long-term care institutional use of this population. Therefore, the results obtained might be generalizable to all of Sweden. We have earlier reported these data in contrast with the New York State data, described in Fries et al. (1991).

The Japanese data were derived from a sample of 871 residents in 8 long-term care facilities in the Tokyo area. The sample includes 4 geriatric hospitals, 3 facilities equivalent to U.S. nursing homes, and 1 specialized rehabilitation hospital. Together, this is one of the largest and most comprehensive data sets collected on Japanese institutionalized elderly. This project, currently in its final phases, is validating the newer RUG-III system, using methods virtually identical to both the Swedish and original U.S. studies. Preliminary results indicate that the RUG-III system works quite well; we have utilized these data here to develop RUG-II classifications compatible with those from the other nations.

The Italian data are the least representative, describing a total of 316 residents from 2 "typical" nursing homes in Italy, 1 urban and 1 rural. The urban nursing home is a 220-bed facility in Rome, and the rural nursing home has 96 beds and is located in the Abruzzo region. These classifications were directly computed from application of the Italian translation of the MDS.

These three countries' data are contrasted here with those describing the entire population of New York State nursing home residents, assessed for payment determination and quality assurance. These data are for 94,840 residents in a cross-section of the population, collected in a wave of assessments from July to December 1988. Although we have seen differences across States in RUG-II and RUG-III distributions, these differences have been primarily in the percentage of residents in the rehabilitation categories. Otherwise, we believe the New York data are representative of U.S. nursing homes.

For each sample, the residents were classified into the 16 categories of RUG-II. The RUG-II system was used rather than the newer RUG-III because the data currently available in two of the nations were insufficient to support the latter. Although the design of RUG-III is similar to that of RUG-II, the latter has only two dimensions. A hierarchy of five groups describes the resident in terms similar to those of RUG-III, then each group is split according to a RUG-II ADL index based on three ADLs: toileting, eating, and transfer. Within each major category (e.g., heavy rehabilitation), from two to five groups are formed, with increasing levels of dependency (e.g., RA residents are more functionally independent than RB

residents). (The RUG-II system is described in Figure 5 at the end of this article, and additional details are available in Schneider et al., 1988.)

The comparison of the RUG-II distributions in these four nations' nursing homes is given in Table 2. It represents the prevalence of each of the major categories as well as of the individual RUG-II groups. Thus, 66.3 percent of all New York State (U.S.) residents are in the reduced physical functions category, with 32 percent (21.0/66.3) of these residents in the highest functioning PA group. Similar prevalences for other countries are provided in other columns. An additional row provides for each country an estimated overall case-mix index, using the relative resource cost derived in New York State to weight the percentages of residents in each RUG-II group. The average case-mix of the derivation sample in 1986 was arbitrarily set to 1.00; by 1988 in New York State, it had risen to 1.04.

When examined at the level of the major hierarchy categories, three of the nations (except Japan) have approximately equal percentages in the lower two categories—about 70 to 75 percent—although the balance between behavior problems and others (reduced physical functions) is similar only between the United States and Italy. The distributions for the first three (more resource-intensive) categories vary across the four nations. Although the distribution across all five categories is similar for the United States and Italy, the distributions within categories are considerably different, representing significantly contrasting levels of

ADL functioning. These differences are also seen in the case-mix indexes, which range from 0.79 for Italy to almost 40 percent more (1.10) for Sweden and Japan.

Extreme caution needs to be taken in interpreting the results seen in this table, for the samples may not each be representative of an entire nation. The primary finding is that there are significant differences in the samples, despite the fact that each represents institutionalized elderly. However, it is also encouraging to examine the differences in light of national policy. We have previously suggested that the higher percentage of behavior problems in the Swedish sample may be the result of policy that moved dementia residents out of hospitals and into nursing homes. Similarly, the lower U.S. prevalence of rehabilitation patients, especially those with better ADL functioning, may in part be the result of the short-term, intensive rehabilitation benefit available under Medicare; such patients in rehabilitation hospitals and rehabilitation units of acute care hospitals are not included in this sample. The lower case-mix index for Italy appears consistent with the policy of Italian nursing homes to admit less disabled elderly, while the most disabled remain in hospitals.

Discussion and conclusions

There is a growing awareness among the industrialized nations of shared common problems and

Table 2

RUG-II distributions, by country and resident category: United States, Sweden, Japan, and Italy

Resident category	United States	Sweden	Japan	Italy
	Percent			
Total	100.0	100.0	100.0	100.0
Heavy rehabilitation:	4.3	9.1	7.3	12.7
RA	0.7	5.7	3.4	6.6
RB	3.6	3.4	3.9	6.0
Special care:	5.3	4.2	15.6	0.3
SA	1.2	1.0	3.8	0.3
SB	4.1	3.3	11.9	0.0
Clinically complex:	18.7	10.0	26.3	13.9
CA	2.7	2.3	6.4	7.3
CB	8.3	3.8	14.2	4.7
CC	6.3	3.6	5.7	1.9
CD	1.4	0.4	0.0	0.0
Behavior problems:	5.4	32.0	16.2	7.6
BA	1.1	4.8	5.5	6.3
BB	3.1	19.6	10.2	1.3
BC	1.2	7.5	0.6	0.0
Reduced physical functions:	66.3	44.7	34.6	65.5
PA	21.0	6.6	17.0	59.5
PB	3.4	3.6	4.5	4.1
PC	29.3	23.0	12.2	1.9
PD	9.8	10.4	0.9	0.0
PE	2.9	1.1	0.0	0.0
Case-mix index	1.04	1.10	1.09	0.79
Number of residents	94,840	1,134	871	316

NOTES: RUG-II is Resource Utilization Groups, Version II. Within each category, letter designations (RA, RB, SA, SB, etc.) reflect decreasing levels of activities of daily living function.

SOURCES: Fries, B., University of Michigan, 1991; Ikegami, N., Keio University, 1992; and Bernabei, R., Università Cattolica del Sacro Cuore, 1992.

common objectives in providing long-term care to a rapidly growing frail elderly population (Organization for Economic Cooperation and Development, 1988). Until recently, technologies amenable to quantitative policy research to address these problems were unavailable. The application and validation efforts currently under way in Europe, Asia, and Australia strongly suggest that nursing home populations are indeed very different and that the RAI, MDS, and RUG systems hold considerable promise as a common language for clinicians, researchers, and policymakers to compare resident populations, care patterns, staffing, and resource requirements. Clearly, across languages and cultures, there must be considerable care taken to ensure appropriate translation of the intrinsic concepts, but once accomplished, the development of comparable data sets is feasible.

The current developments described in this review provide a network of data collection and analysis efforts, replicating in other nations samples of nursing home resident assessments that can be contrasted with each other and the large data sets we are assembling in the United States. In the future, countries may be able to assemble smaller, larger, or even population-based samples.

Within each country, resident assessment would provide researchers with insights, including descriptions of resident characteristics, care process, quality, and outcomes, into their own long-term care systems. As an example, Australian researchers might better understand the different types of residents that are receiving non-acute care in hospitals or are located in nursing homes or "hostels." If longitudinal followup is feasible, it would be possible to look at care outcomes.

Given this, the larger scope of comparative work is feasible. With consistent RAI items, definitions, and training, we have an unparalleled opportunity to contrast these populations, to understand variations in care patterns and evaluate their effect on outcomes, and to examine "naturally occurring experiments" provided by differing long-term care systems.

Initial applications appear most promising in the area of exploring differences in clinical practice patterns. An example is the evaluation of the causes of a decreased incidence of falls in Japanese nursing homes compared with those in the United States; Lipsitz and colleagues have recently shown this phenomenon to be related to differential use of antidepressant medication (Lipsitz et al., 1991). With identification of appropriate control groups, we can contrast longitudinal outcomes resulting from physical or chemical restraints, all without additional data collection, intervention, or training. This in turn can lead to the design of more definitive intervention studies in the United States or elsewhere. The RAI tools currently being developed in the United States, including RUGs, summary clinical scales, and quality measures (both cross-sectional and longitudinal) will serve well to contrast populations. A major result may be identifying the effects of alternative clinical practices, such as the use of rehabilitation or placement policies, upon resident

outcomes. These outcomes can be not only mortality but more sensitive measures such as a decline or improvement in physical functioning. We are currently examining the breadth of different hypotheses that can be addressed by samples that are either developed by convenience sampling or are representative of a population, that have different scopes of longitudinal followup, and that can result from additional information describing the staffing, organization, structure, or costs of the institution.

Further, the availability of resident assessment and case-mix data will permit economic analysis of the effectiveness and efficiency of alternative financing, regulatory, and system designs. Clearly, countries need to discriminate carefully in what is borrowed or adapted from elsewhere. For example, considerable research is required to assess the utility of the RUG-III methodology in countries that rely heavily on hospitals with a mix of acute and chronic patients in the same settings. Studies in England, Australia, and Germany are beginning to test RUG-III in acute care hospitals. One likely result of an analysis such as that exemplified in Table 2 is that post-acute care institutions in other nations compare well with skilled nursing facilities in the United States, thus changing our unit of analysis to a more flexible one that incorporates post-acute geriatric care in both hospitals and nursing homes.

It is premature to forecast the possible impact that resident assessment and classification systems may have on future reforms of the long-term care systems in industrialized nations. The efforts described in this review are fairly independent and have largely been limited to validating the RUG-III system or evaluating clinical practice. Indeed, the policy effects of the RAI and RUG-III systems on long-term care financing and service delivery reform in the United States are still evolving and will be intensively evaluated over the next several years. Nevertheless, whether the long-term care system is financed on a fee-for-service basis or through global budgets, there is a common international objective to provide a more equitable system of resource allocation that rewards greater efficiency and effectiveness in caring for the elderly. Accurate and standardized assessments, linked directly to care planning, can help identify and address medical, mental, and functional problems. Case-mix systems that effectively differentiate residents according to the resources they require (and consume) are essential elements to achieving such objectives.

Technology transfer also has considerable potential to benefit U.S. long-term care programs. Research efforts abroad that document clinical practice patterns and organizational arrangements that lead to superior resident outcomes will clearly benefit the quality of care for nursing home residents in the United States. Application of the RUG-III system for resource allocation in global budgeted systems such as the Netherlands might also be useful for long-term care financing reform in the United States. Finally, experimentation with broader application and modification of the RAI and RUG systems for long-

term care services provided in the home or alternative housing could facilitate system-level analysis of the impact of policy proposals on the full continuum of care for the frail elderly. Northern European countries may be particularly suited to lead this development effort because of their relatively well-developed infrastructure for providing long-term care in the community.

Acknowledgments

The authors gratefully acknowledge the gracious assistance of the leaders and project staffs of the several national studies discussed here; this is as much their article as ours. Those participating in these efforts include Drs. Roberto Bernabei, G. Iain Carpenter, Jean-Noël DuPasquier, Dinnus Frijters, Robert Heinrich, Naoki Ikegami, Cora van der Kooij, Gunnar Ljunggren, Miel Ribbe, Marianne Schroll, Malgosia Zlobicki. This work would also not have been possible without the efforts of the others on the RAI Development Team (Drs. Catherine Hawes, John Morris, Charles Phillips, and Vince Mor) and on the RUG-III Development Team (Dr. Don Schneider, Dr. William Foley, Marie Gavazzi, and Dr. Robert Burke). We also thank Elizabeth Cornelius and Alan Friedlob of the Health Care Financing Administration who commented on earlier versions of this article and Carol Lynn Dacko of the University of Michigan for her technical assistance throughout these developments.

References

- Arling, G., Nordquist, R.H., Brant, B.A., et al.: Nursing Home Case Mix: Patient Classification by Nursing Resource Use. *Medical Care* 25(1):9-19, Jan. 1987.
- Cameron, J.M.: Case-Mix and Resource Use in Long-Term Care. *Medical Care* 23(4):296-309, Apr. 1985.
- Doty, P.: Long-Term Care in International Perspective. *Health Care Financing Review*. 1988 Annual Supplement. Pp. 145-155. HCFA Pub. No. 03275. Office of Research and Demonstrations, Health Care Financing Administration. Washington. U.S. Government Printing Office, Dec. 1988.
- Fetter, R.B., Brand, D.A., and Gamache, D.: *DRGs: Their Design and Development*. Ann Arbor, MI. Health Administration Press, 1991.
- Fries, B.E., and Cooney, L.M.: Resource Utilization Groups: A Patient Classification System for Long-Term Care. *Medical Care* 23(2):110-122, Feb. 1985.
- Fries, B.E., Ljunggren, G., and Winblad, B.: International comparison of nursing homes: The need for resident-level classification. *Journal of the American Geriatrics Society* 39(1):10-16, Jan. 1991.
- Fries, B.E., Schneider, D.P., Foley, W.J., et al.: Case-Mix Classification of Medicare Residents in Skilled Nursing Facilities: Resource Utilization Groups (RUG-T18). *Medical Care* 27(9):843-858, Sept. 1989.
- Fries, B.E., Schneider, D., Foley, W.J., et al.: Refining a Case-Mix Measure for Nursing Homes: Resource Utilization Groups (RUG-III). To be published.
- Frijters, D.H.M., and Kooij, C.H. vd.: *Classificatie van verpleeghuispatiënten in zorgwaartegroepen*. Utrecht, Netherlands. To be published.
- Hawes, C., Morris, J.N., Phillips, C., et al.: Reliability Estimates for the Minimum Data Set for Nursing Facility Resident Assessment and Care Screening (MDS). To be published.
- Hawes, C., Phillips, C., and Fries, B.E.: Do Physical Restraints Cost More in Nursing Homes? To be published.
- Institute of Medicine: *Improving the Quality of Care in Nursing Homes*. Washington, DC. National Academy Press, 1986.
- Katz, S., Form, A.B., Moskowitz, R.W., et al.: Studies of Illness in the Aged: The Index of ADL: A Standardized Measure of Biological and Psychological Function. *Journal of the American Medical Association* 195:914-919, Sept. 1963.
- Lipsitz, L.A., Hirayama, T., Nakajima, I., et al.: Muscle Strength, Medications, and Falls in Elderly Japanese and American Nursing Home Residents (abstract). *Journal of the American Geriatrics Society* 39:A10, 1991.
- Ljunggren, G., Fries, B.E., and Winblad, U.: International Validation and Reliability Testing of a Patient Classification System for Long-Term Care. *European Journal of Gerontology* 1(6):372-383, 1992.
- Morris, J.N., Fries, B.E., Mehr, D.R., et al.: *MDS Cognitive Performance Scale*. To be published.
- Morris, J.N., Hawes, C., Fries, B.E., et al.: Designing the National Resident Assessment Instrument for Nursing Facilities. *The Gerontologist* 30(3):293-307, June 1990.
- Morris, J.N., Hawes, C., Murphy, K., et al.: *Long-Term Care Resident Assessment Instrument Training Manual*. Natick, MA. Eliot Press, 1991.
- Morris, J.N., Sherwood, S., May, M.I., et al.: FRED ©: An Innovative Approach to Nursing Home Level-of-Care Assignments. *Health Services Research* 22(2):117-138, 1987.
- National Center for Health Services Research: Final Report: Summary Findings from Site Visits to State Regulatory and Data Collection Agencies—August 1985. Contract Number 282-83-2114. U.S. Public Health Service, 1985.
- Organization for Economic Cooperation and Development: *Aging Populations: The Social Policy Implications*. Paris. 1988.
- Royal College of Physicians: *High Quality Long-Term Care for Elderly People: Guidelines and Audit Measures*. London. The Royal College of Physicians, Jan. 1992.
- Schneider, D.P., Fries, B.E., Foley, W.J., et al.: Case mix for nursing home payment: Resource utilization groups, version II. *Health Care Financing Review* 1988 Annual Supplement. Pp. 39-52. HCFA Pub. No. 03275. Office of Research and Demonstrations, Health Care Financing Administration. Washington. U.S. Government Printing Office, Dec. 1988.
- Swearington, C.: *A Methodology for Finding, Classifying, and Comparing Cost for Services in Long-Term Care Settings*. Cambridge, MA. Abt Associates, Inc., 1978.

Weissert, W.G., Scanlon, W.J., Wan T.T.H., et al.: Care for the chronically ill: Nursing home incentive payment experiment. *Health Care Financing Review* 5(2):41-49. HCFA Pub. No. 03168. Office of Research and Demonstrations, Health Care Financing Administration. Washington. U.S. Government Printing Office, Winter 1983.

Winn, S.: Assessment of Cost Related Characteristics and Conditions of Long-Term Care Patients. *Inquiry* 12(12):344-353, Dec. 1975.

Figure 4

MINIMUM DATA SET FOR NURSING HOME RESIDENT ASSESSMENT AND CARE SCREENING (MDS) **BACKGROUND INFORMATION/INTAKE AT ADMISSION**

I. IDENTIFICATION INFORMATION

1. RESIDENT NAME	(First) (Middle Initial) (Last)
2. DATE OF CURRENT ADMISSION	Month Day Year
3. MEDICARE NO. (SOC. SEC. or Comparable No. if no Medicare No.)	
4. FACILITY PROVIDER NO.	Federal No.
5. GENDER	1. Male 2. Female
6. RACE/ETHNICITY	1. American Indian/Alaska Native 2. Asian/Pacific Islander 3. Black, not of Hispanic origin 4. Hispanic 5. White, not of Hispanic origin
7. BIRTHDATE	Month Day Year
8. LIFETIME OCCUPATION	
9. PRIMARY LANGUAGE	Resident's primary language is a language other than English 0. No 1. Yes (Specify)
10. RESIDENTIAL HISTORY PAST 5 YEARS	(Check all settings resident lived in during 5 years prior to admission) Prior stay at this nursing home Other nursing home/residential facility MH/psychiatric setting MR/DD setting NONE OF ABOVE
11. MENTAL HEALTH HISTORY	Does resident's RECORD indicate any history of mental retardation, mental illness, or any other mental health problem? 0. No 1. Yes
12. CONDITIONS RELATED TO MR/DD STATUS	(Check all conditions that are related to MR/DD status, that were manifested before age 22, and are likely to continue indefinitely) Not applicable—no MR/DD (Skip to Item 13) MR/DD with Organic Condition Cerebral palsy Down's syndrome Autism Epilepsy Other organic condition related to MR/DD MR/DD with no organic condition Unknown
13. MARITAL STATUS	1. Never Married 2. Married 3. Widowed 4. Separated 5. Divorced
14. ADMITTED FROM	1. Private home or apt. 2. Nursing home 3. Acute care hospital 4. Other
15. LIVED ALONE	0. No 1. Yes 2. In other facility
16. ADMISSION INFORMATION AMENDED	(Check all that apply) Accurate information unavailable earlier Observation revealed additional information Resident unstable at admission

II. BACKGROUND INFORMATION AT RETURN/READMISSION

1. DATE OF CURRENT READMISSION	Month Day Year
2. MARITAL STATUS	1. Never Married 2. Married 3. Widowed 4. Separated 5. Divorced
3. ADMITTED FROM	1. Private home or apt. 2. Nursing home 3. Acute care hospital 4. Other
4. LIVED ALONE	0. No 1. Yes 2. In other facility
5. ADMISSION INFORMATION AMENDED	(Check all that apply) Accurate information unavailable earlier Observation revealed additional information Resident unstable at admission

III. CUSTOMARY ROUTINE (ONLY AT FIRST ADMISSION)

1. CUSTOMARY ROUTINE (Year prior to first admission to a nursing home)	(Check all that apply. If all information UNKNOWN, check last box only.)
CYCLE OF DAILY EVENTS	
Stays up late at night (e.g., after 9 pm)	a.
Naps regularly during day (at least 1 hour)	b.
Goes out 1+ days a week	c.
Stays busy with hobbies, reading, or fixed daily routine	d.
Spends most time alone or watching TV	e.
Moves independently indoors (with appliances, if used)	f.
NONE OF ABOVE	g.
EATING PATTERNS	
Distinct food preferences	h.
Eats between meals all or most days	i.
Use of alcoholic beverage(s) at least weekly	j.
NONE OF ABOVE	k.
ADL PATTERNS	
In bed/clothes much of day	l.
Wakens to toilet all or most nights	m.
Has irregular bowel movement pattern	n.
Prefers showers for bathing	o.
NONE OF ABOVE	p.
INVOLVEMENT PATTERNS	
Daily contact with relatives/close friends	q.
Usually attends church, temple, synagogue (etc.)	r.
Finds strength in faith	s.
Daily animal companion/presence	t.
Involved in group activities	u.
NONE OF ABOVE	v.
UNKNOWN—Resident/family unable to provide information	
w.	

END

Signature of RN Assessment Coordinator: _____

Signatures of Others Who Completed Part of the Assessment: _____

Figure 4 – Continued

MINIMUM DATA SET FOR NURSING HOME RESIDENT ASSESSMENT AND CARE SCREENING (MDS) (Status in last 7 days, unless other time frame indicated)

SECTION A. IDENTIFICATION AND BACKGROUND INFORMATION

1. ASSESSMENT DATE	<div style="display: flex; justify-content: space-around;"> <div><input type="text"/> <input type="text"/> — <input type="text"/> <input type="text"/> — <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></div> <div>Month Day Year</div> </div>	
2. RESIDENT NAME	<div style="display: flex; justify-content: space-between;"> <input type="text"/> (First) <input type="text"/> (Middle Initial) <input type="text"/> (Last) </div>	
3. SOCIAL SECURITY NO.	<div style="display: flex; justify-content: space-around;"> <div><input type="text"/> <input type="text"/> <input type="text"/> — <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></div> </div>	
4. MEDICAID NO. (if applicable)	<div style="display: flex; justify-content: space-around;"> <div><input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></div> </div>	
5. MEDICAL RECORD NO.	<div style="display: flex; justify-content: space-around;"> <div><input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></div> </div>	
6. REASON FOR ASSESSMENT	<div style="display: flex; justify-content: space-between;"> <div> 1. Initial admission assess. 2. Hosp/Medicare reassess. 3. Readmission assessment 4. Annual assessment </div> <div> 5. Significant change in status 6. Other (e.g., UR) </div> </div>	
7. CURRENT PAYMENT SOURCE(S) FOR N.H. STAY	(Billing Office to indicate; check all that apply) <div style="display: flex; justify-content: space-between;"> <div> Medicaid <input type="checkbox"/> a Medicare <input type="checkbox"/> b CHAMPUS <input type="checkbox"/> c </div> <div> VA <input type="checkbox"/> d Self pay/Private insurance <input type="checkbox"/> e Other <input type="checkbox"/> f </div> </div>	
8. RESPONSIBILITY/LEGAL GUARDIAN	(Check all that apply) <div style="display: flex; justify-content: space-between;"> <div> Legal guardian <input type="checkbox"/> a Other legal oversight <input type="checkbox"/> b Durable power atty./health care proxy <input type="checkbox"/> c </div> <div> Family member responsible <input type="checkbox"/> d Resident responsible <input type="checkbox"/> e NONE OF ABOVE <input type="checkbox"/> f </div> </div>	
9. ADVANCED DIRECTIVES	(For those items with supporting documentation in the medical record, check all that apply) <div style="display: flex; justify-content: space-between;"> <div> Living will <input type="checkbox"/> a Do not resuscitate <input type="checkbox"/> b Do not hospitalize <input type="checkbox"/> c Organ donation <input type="checkbox"/> d Autopsy request <input type="checkbox"/> e </div> <div> Feeding restrictions <input type="checkbox"/> f Medication restrictions <input type="checkbox"/> g Other treatment restrictions <input type="checkbox"/> h NONE OF ABOVE <input type="checkbox"/> i </div> </div>	
10. DISCHARGE PLANNED WITHIN 3 MOS.	(Does not include discharge due to death) 0. No 1. Yes 2. Unknown/Uncertain	
11. PARTICIPATE IN ASSESSMENT	<div style="display: flex; justify-content: space-between;"> <div> a. Resident 0. No 1. Yes </div> <div> b. Family 0. No 1. Yes 2. No family </div> </div>	
12. SIGNATURES	Signature of RN Assessment Coordinator _____ Signatures of Others Who Completed Part of the Assessment _____ _____ _____	

SECTION B. COGNITIVE PATTERNS

1. COMATOSE	(Persistent vegetative state/no discernible consciousness) 0. No 1. Yes (Skip to SECTION E)	
2. MEMORY	(Recall of what was learned or known) <div style="display: flex; justify-content: space-between;"> <div> a. Short-term memory OK—seems/appears to recall after 5 minutes 0. Memory OK b. Long-term memory OK—seems/appears to recall long past 0. Memory OK </div> <div> 1. Memory problem 1. Memory problem </div> </div>	
3. MEMORY/RECALL ABILITY	(Check all that resident normally able to recall during last 7 days) <div style="display: flex; justify-content: space-between;"> <div> Current season <input type="checkbox"/> a Location of own room <input type="checkbox"/> b Staff names/faces <input type="checkbox"/> c </div> <div> That he/she is in a nursing home <input type="checkbox"/> d NONE OF ABOVE are recalled <input type="checkbox"/> e </div> </div>	

☐ = Code the appropriate response ☐ = Check all the responses that apply

August 20, 1990

4. COGNITIVE SKILLS FOR DAILY DECISION-MAKING	(Made decisions regarding tasks of daily life) 0. Independent—decisions consistent/reasonable 1. Modified Independence—some difficulty in new situations only 2. Moderately Impaired—decisions poor; cues/supervision required 3. Severely Impaired—never/rarely made decisions	
5. INDICATORS OF DELIRIUM—PERIODIC DISORDERED THINKING/AWARENESS	(Check if condition over last 7 days appears different from usual functioning) Less alert, easily distracted Changing awareness of environment Episodes of incoherent speech Periods of motor restlessness or lethargy Cognitive ability varies over course of day NONE OF ABOVE	
6. CHANGE IN COGNITIVE STATUS	Change in resident's cognitive status, skills, or abilities in last 90 days 0. No change 1. Improved 2. Deteriorated	

SECTION C. COMMUNICATION/HEARING PATTERNS

1. HEARING	(With hearing appliance, if used) 0. Hears adequately—normal talk, TV, phone 1. Minimal difficulty when not in quiet setting 2. Hears in special situations only—speaker has to adjust tonal quality and speak distinctly 3. Highly impaired/absence of useful hearing	
2. COMMUNICATION DEVICES/TECHNIQUES	(Check all that apply during last 7 days) Hearing aid, present and used Hearing aid, present and not used Other receptive comm. techniques used (e.g., lip read) NONE OF ABOVE	
3. MODES OF EXPRESSION	(Check all used by resident to make needs known) <div style="display: flex; justify-content: space-between;"> <div> Speech <input type="checkbox"/> a Writing messages to express or clarify needs <input type="checkbox"/> b </div> <div> Sign/gestures/sounds <input type="checkbox"/> c Communication board <input type="checkbox"/> d Other <input type="checkbox"/> e NONE OF ABOVE <input type="checkbox"/> f </div> </div>	
4. MAKING SELF UNDERSTOOD	(Express information content—however able) 0. Understood 1. Usually Understood—difficulty finding words or finishing thoughts 2. Sometimes Understood—ability is limited to making concrete requests 3. Rarely/Never Understood	
5. ABILITY TO UNDERSTAND OTHERS	(Understanding verbal information content—however able) 0. Understands 1. Usually Understands—may miss some pertinent of message 2. Sometimes Understands—responds adequately to simple, direct communication 3. Rarely/Never Understands	
6. CHANGE IN COMMUNICATION/HEARING	Resident's ability to express, understand or hear information has changed over last 90 days 0. No change 1. Improved 2. Deteriorated	

SECTION D. VISION PATTERNS

1. VISION	(Ability to see in adequate light and with glasses if used) 0. Adequate—sees fine detail, including regular print in newspapers/books 1. Impaired—sees large print, but not regular print in newspapers/books 2. Highly Impaired—limited vision; not able to see newspaper headlines; appears to follow objects with eyes 3. Severely Impaired—no vision or appears to see only light, colors, or shapes	
2. VISUAL LIMITATIONS/DIFFICULTIES	Side vision problems—decreased peripheral vision (e.g., leaves food on one side of tray, difficulty traveling, bumps into people and objects, misjudges placement of chair when seating self) Experiences any of following: sees halos or rings around lights; sees flashes of light; sees "curtains" over eyes NONE OF ABOVE	
3. VISUAL APPLIANCES	Glasses; contact lenses; lens implant; magnifying glass 0. No 1. Yes	

Figure 4 – Continued

SECTION E. PHYSICAL FUNCTIONING AND STRUCTURAL PROBLEMS

1. ADL SELF-PERFORMANCE—(Code for resident's PERFORMANCE OVER ALL SHIFTS during last 7 days—Not including setup)			
0. INDEPENDENT — No help or oversight — OR — Help/oversight provided only 1 or 2 times during last 7 days			
1. SUPERVISION — Oversight, encouragement or cueing provided 3+ times during last 7 days — OR — Supervision plus physical assistance provided only 1 or 2 times during last 7 days			
2. LIMITED ASSISTANCE — Resident highly involved in activity; received physical help in guided maneuvering of limbs or other nonweight bearing assistance 3+ times — OR — More help provided only 1 or 2 times during last 7 days			
3. EXTENSIVE ASSISTANCE — While resident performed part of activity, over last 7-day period, help of following type(s) provided 3 or more times: — Weight-bearing support — Full staff performance during part (but not all) of last 7 days			
4. TOTAL DEPENDENCE — Full staff performance of activity during entire 7 days			
2. ADL SUPPORT PROVIDED — (Code for MOST SUPPORT PROVIDED OVER ALL SHIFTS during last 7 days; code regardless of resident's self-performance classification)			
		(1)	(2)
		SELF-PERF.	SUPPORT
		0. No setup or physical help from staff	
		1. Setup help only	
		2. One-person physical assist	
		3. Two+ persons physical assist	
a.	BED MOBILITY	How resident moves to and from lying position, turns side to side, and positions body while in bed	
b.	TRANSFER	How resident moves between surfaces—to/from: bed, chair, wheelchair, standing position (EXCLUDE to/from bath/toilet)	
c.	LOCOMOTION	How resident moves between locations in his/her room and adjacent corridor on same floor. If in wheelchair, self-sufficiency once in chair	
d.	DRESSING	How resident puts on, fastens, and takes off all items of street clothing, including donning/removing prosthesis	
e.	EATING	How resident eats and drinks (regardless of skill)	
f.	TOILET USE	How resident uses the toilet room (or commode, bedpan, urinal); transfer on/off toilet, cleanses, changes pad, manages ostomy or catheter, adjusts clothes	
g.	PERSONAL HYGIENE	How resident maintains personal hygiene, including combing hair, brushing teeth, shaving, applying makeup, washing/drying face, hands, and perineum (EXCLUDE baths and showers)	
3.	BATHING	How resident takes full-body bath/shower, sponge bath, and transfers in/out of tub/shower (EXCLUDE washing of back and hair. Code for most dependent in self-performance and support. Bathing Self-Performance codes appear below)	
		0. Independent—No help provided	
		1. Supervision—Oversight help only	
		2. Physical help limited to transfer only	
		3. Physical help in part of bathing activity	
		4. Total dependence	
4.	BODY CONTROL PROBLEMS	(Check all that apply during last 7 days)	
		Balance—partial or total loss of ability to balance self while standing	a.
		Bedfast all or most of the time	b.
		Contracture to arms, legs, shoulders, or hands	c.
		Hemiplegia/hemiparesis	d.
		Quadruplegia	e.
		Arm—partial or total loss of voluntary movement	f.
		Hand—lack of dexterity (e.g., problem using toothbrush or adjusting hearing aid)	g.
		Leg—partial or total loss of voluntary movement	h.
		Leg—unsteady gait	i.
		Trunk—partial or total loss of ability to position, balance, or turn body	j.
		Amputation	k.
		NONE OF ABOVE	l.
5.	MOBILITY APPLIANCES/DEVICES	(Check all that apply during last 7 days)	
		Cane/walker	a.
		Brace/prosthesis	b.
		Wheeled self	c.
		Other person wheeled	d.
		Lifted (manually/mechanically)	e.
		NONE OF ABOVE	f.

6.	TASK SEGMENTATION	Resident requires that some or all of ADL activities be broken into a series of subtasks so that resident can perform them 0. No 1. Yes	
7.	ADL FUNCTIONAL REHABILITATION POTENTIAL	Resident believes he/she capable of increased independence in at least some ADLs Direct care staff believe resident capable of increased independence in at least some ADLs Resident able to perform tasks/activity but is very slow Major difference in ADL Self-Performance or ADL Support in mornings and evenings (at least a one category change in Self-Performance or Support in any ADL) NONE OF ABOVE	a. b. c. d. e.
8.	CHANGE IN ADL FUNCTION	Change in ADL self-performance in last 90 days 0. No change 1. Improved 2. Deteriorated	

SECTION F. CONTINENCE IN LAST 14 DAYS

1. CONTINENCE SELF-CONTROL CATEGORIES (Code for resident performance over all shifts)			
0. CONTINENT — Complete control			
1. USUALLY CONTINENT — BLADDER, incontinent episodes once a week or less; BOWEL, less than weekly			
2. OCCASIONALLY INCONTINENT — BLADDER, 2+ times a week but not daily; BOWEL, once a week			
3. FREQUENTLY INCONTINENT — BLADDER, tended to be incontinent daily, but some control present (e.g., on day shift); BOWEL, 2-3 times a week			
4. INCONTINENT — Had inadequate control. BLADDER, multiple daily episodes; BOWEL, all (or almost all) of the time			
a.	BOWEL CONTINENCE	Control of bowel movement, with appliance or bowel continence programs, if employed	
b.	BLADDER CONTINENCE	Control of urinary bladder function (if dribbles, volume insufficient to soak through underpants), with appliances (e.g., Foley) or continence programs, if employed	
2.	INCONTINENCE RELATED TESTING	(Skip if resident's bladder continence code equals 0 or 1 AND no catheter is used) Resident has been tested for a urinary tract infection Resident has been checked for presence of a fecal impaction, or there is adequate bowel elimination NONE OF ABOVE	a. b. c.
3.	APPLIANCES AND PROGRAMS	Any scheduled toileting plan External (condom) catheter Indwelling catheter Intermittent catheter Did not use toilet room/commode/urinal	a. b. c. d. e.
		Pads/briefs used Enemas/irrigation Ostomy NONE OF ABOVE	f. g. h. i.
4.	CHANGE IN URINARY CONTINENCE	Change in urinary continence/appliances and programs in last 90 days 0. No change 1. Improved 2. Deteriorated	

SECTION G. PSYCHOSOCIAL WELL-BEING

1.	SENSE OF INITIATIVE/INVOLVEMENT	At ease interacting with others At ease doing planned or structural activities At ease doing self-initiated activities Establishes own goals Pursues involvement in life of facility (e.g., makes/keeps friends; involved in group activities; responds positively to new activities; assists at religious services) Accepts invitations into most group activities NONE OF ABOVE	a. b. c. d. e. f. g.
2.	UNSETTLED RELATIONSHIPS	Covert/open conflict with and/or repeated criticism of staff Unhappy with roommate Unhappy with residents other than roommate Openly expresses conflict/anger with family or friends Absence of personal contact with family/friends Recent loss of close family member/friend NONE OF ABOVE	a. b. c. d. e. f. g.
3.	PAST ROLES	Strong identification with past roles and life status Expresses sadness/anger/empty feeling over lost roles/status NONE OF ABOVE	a. b. c.

Figure 4 – Continued

SECTION H. MOOD AND BEHAVIOR PATTERNS

1.	SAD OR ANXIOUS MOOD	(Check all that apply during last 30 days) VERBAL EXPRESSIONS of DISTRESS by resident (sadness, sense that nothing matters, hopelessness, worthlessness, unrealistic fears, vocal expressions of anxiety or grief) DEMONSTRATED (OBSERVABLE) SIGNS of mental DISTRESS — Tearfulness, emotional groaning, sighing, breathlessness — Motor agitation such as pacing, handwringing or picking — Failure to eat or take medications, withdrawal from self-care or leisure activities — Pervasive concern with health — Recurrent thoughts of death—e.g., believes he/she about to die, have a heart attack — Suicidal thoughts/actions NONE OF ABOVE	a. b. c. d. e. f. g. h.
2.	MOOD PERSISTENCE	Sad or anxious mood intrudes on daily life over last 7 days — not easily altered, doesn't "cheer up" 0. No 1. Yes	
3.	PROBLEM BEHAVIOR	(Code for behavior in last 7 days) 0. Behavior not exhibited in last 7 days 1. Behavior of this type occurred less than daily 2. Behavior of this type occurred daily or more frequently WANDERING (moved with no rational purpose, seemingly oblivious to needs or safety) VERBALLY ABUSIVE (others were threatened, screamed at, cursed at) PHYSICALLY ABUSIVE (others were hit, shoved, scratched, sexually abused) SOCIALLY INAPPROPRIATE/DISRUPTIVE BEHAVIOR (made disrupting sounds, noisy, screams, self-abusive acts, sexual behavior or disrobing in public, smeared/threw food/feces, hoarding, rummaged through others' belongings)	a. b. c. d.
4.	RESIDENT RESISTS CARE	(Check all types of resistance that occurred in the last 7 days) Resisted taking medications/injection Resisted ADL assistance NONE OF ABOVE	a. b. c.
5.	BEHAVIOR MANAGEMENT PROGRAM	Behavior problem has been addressed by clinically developed behavior management program. (Note: Do not include programs that involve only physical restraints or psychotropic medications in this category) 0. No behavior problem 1. Yes, addressed 2. No, not addressed	
6.	CHANGE IN MOOD	Change in mood in last 90 days 0. No change 1. Improved 2. Deteriorated	
7.	CHANGE IN PROBLEM BEHAVIOR	Change in problem behavioral signs in last 90 days 0. No change 1. Improved 2. Deteriorated	

SECTION I. ACTIVITY PURSUIT PATTERNS

1.	TIME AWAKE	(Check appropriate time periods over last 7 days) Resident awake all or most of time (i.e., naps no more than one hour per time period) in the: Morning a. Evening c. Afternoon b. NONE OF ABOVE d.
2.	AVERAGE TIME INVOLVED IN ACTIVITIES	0. Most—more than 2/3 of time 2. Little—less than 1/3 of time 1. Some—1/3 to 2/3 of time 3. None
3.	PREFERRED ACTIVITY SETTINGS	(Check all settings in which activities are preferred) Own room a. Outside facility d. Day/activity room b. NONE OF ABOVE e. Inside NH/off unit c.

4.	GENERAL ACTIVITY PREFERENCES (adapted to resident's current abilities)	(Check all PREFERENCES whether or not activity is currently available to resident) Cards/other games a. Spiritual/religious activities f. Crafts/arts b. Trips/shopping g. Exercise/sports c. Walking/wheeling outdoors h. Music d. Watch TV i. Read/write e. NONE OF ABOVE j.
5.	PREFERS MORE OR DIFFERENT ACTIVITIES	Resident expresses/indicates preference for other activities/choices 0. No 1. Yes

SECTION J. DISEASE DIAGNOSES

Check only those diseases present that have a relationship to current ADL status, cognitive status, behavior status, medical treatments, or risk of death. (Do not list old/inactive diagnoses.)	
1. DISEASES	(If none apply, CHECK the NONE OF ABOVE box)
HEART/CIRCULATION Atherosclerotic heart disease (ASHD) Cardiac dysrhythmias Congestive heart failure Hypertension Hypotension Peripheral vascular disease Other cardiovascular disease	a. b. c. d. e. f. g.
NEUROLOGICAL Alzheimer's Dementia other than Alzheimer's Aphasia Cerebrovascular accident (stroke) Multiple sclerosis Parkinson's disease	h. i. j. k. l. m.
PULMONARY Emphysema/Asthma/COPO Pneumonia	n. o.
PSYCHIATRIC/MOOD Anxiety disorder Depression Manic depressive (bipolar disease)	p. q. r.
SENSORY Cataracts Glaucoma	s. t.
OTHER Allergies Anemia Arthritis Cancer Diabetes mellitus Explicit terminal prognosis Hypothyroidism Osteoporosis Seizure disorder Septicemia Urinary tract infection— in last 30 days	u. v. w. x. y. z. aa. bb. cc. dd. ee. ff.
2. OTHER CURRENT DIAGNOSES AND ICD-9 CODES	a. b. c. d. e. f. g. h. i. j. k. l. m. n. o. p. q. r. s. t. u. v. w. x. y. z. aa. bb. cc. dd. ee. ff.

SECTION K. HEALTH CONDITIONS

1.	PROBLEM CONDITIONS	(Check all problems that are present in last 7 days unless other time frame indicated) Constipation a. Pain—resident complains or shows evidence of pain daily or almost daily j. Diarrhea b. Recurrent lung aspirations in last 90 days k. Dizziness/vertigo c. Shortness of breath l. Edema d. Syncope (fainting) m. Fecal impaction e. Vomiting n. Fever f. NONE OF ABOVE o. Hallucinations/delusions g. Internal bleeding h. Joint pain i.
2.	ACCIDENTS	Fell in past 30 days a. Hip fracture in last 180 days c. Fell in past 31-180 days b. NONE OF ABOVE d.

Figure 4 – Continued

3.	STABILITY OF CONDITIONS	Conditions/diseases make resident's cognitive, ADL, or behavior status unstable—fluctuating, precarious, or deteriorating	a.
		Resident experiencing an acute episode or a flare-up of a recurrent/chronic problem	b.
		NONE OF ABOVE	c.

4.	SKIN PROBLEMS/ CARE	Open lesions other than stasis or pressure ulcers (e.g., cuts)	a.
		Skin desensitized to pain, pressure, discomfort	b.
		Protective/preventive skin care	c.
		Turning/repositioning program	d.
		Pressure relieving beds, bed/chair pads (e.g., egg crate pads)	e.
		Wound care/treatment (e.g., pressure ulcer care, surgical wound)	f.
		Other skin care/treatment	g.
		NONE OF ABOVE	h.

SECTION L. ORAL/NUTRITIONAL STATUS

1.	ORAL PROBLEMS	Chewing problem	a.
		Swallowing problem	b.
		Mouth pain	c.
		NONE OF ABOVE	d.
2.	HEIGHT AND WEIGHT	Record height (a.) in inches and weight (b.) in pounds. Weight based on most recent status in last 30 days; measure weight consistently in accord with standard facility practice—e.g., in a.m. after voiding, before meal, with shoes off, and in nightclothes.	
		HT (in.) a. WT (lb.) b.	
		c. Weight loss (i.e., 5%+ in last 30 days; or 10% in last 180 days)	
		0. No 1. Yes	c.
3.	NUTRITIONAL PROBLEMS	Complains about the taste of many foods	a.
		Insufficient fluid; dehydrated	b.
		Did NOT consume all/most all liquids provided during last 3 days	c.
		Regular complaint of hunger	d.
4.	NUTRITIONAL APPROACHES	Parenteral/IV	a.
		Feeding tube	b.
		Mechanically altered diet	c.
		Syringe (oral feeding)	d.
		Therapeutic diet	e.
		Dietary supplement between meals	f.
		Plate guard, stabilized built-up utensil, etc.	g.
		NONE OF ABOVE	h.

SECTION O. MEDICATION USE

1.	NUMBER OF MEDICATIONS	(Record the number of different medications used in the last 7 days; enter "0" if none used)	
2.	NEW MEDICATIONS	Resident has received new medications during the last 90 days	
		0. No 1. Yes	
3.	INJECTIONS	(Record the number of days injections of any type received during the last 7 days)	
4.	DAYS RECEIVED THE FOLLOWING MEDICATION	(Record the number of days during last 7 days; enter "0" if not used; enter "1" if long-acting meds. used less than weekly)	
		Antipsychotics	a.
		Anxiolytic/hypnotics	b.
		Antidepressants	c.
5.	PREVIOUS MEDICATION RESULTS	(SKIP this question if resident currently receiving antipsychotics, antidepressants, or anxiolytic/hypnotics—otherwise code correct response for last 90 days) Resident has previously received psychoactive medications for a mood or behavior problem, and these medications were effective (without undue adverse consequences) 0. No, drugs not used 1. Drugs were effective 2. Drugs were not effective 3. Drug effectiveness unknown	

SECTION M. ORAL/DENTAL STATUS

1.	ORAL STATUS AND DISEASE PREVENTION	Debris (soft, easily movable substances) present in mouth prior to going to bed at night	a.
		Has dentures and/or removable bridge	b.
		Some/all natural teeth lost—does not have or does not use dentures (or partial plates)	c.
		Broken, loose, or carious teeth	d.
		Inflamed gums (gingiva); swollen or bleeding gums; oral abscesses, ulcers or rashes	e.
		Daily clearing of teeth/dentures	f.
		NONE OF ABOVE	g.

SECTION N. SKIN CONDITION

1.	STASIS ULCER	(open lesion caused by poor venous circulation to lower extremities)	
		0. No 1. Yes	
2.	PRESSURE ULCERS	(Code for highest stage of pressure ulcer)	
		0. No pressure ulcers	
		1. Stage 1 A persistent area of skin redness (without a break in the skin) that does not disappear when pressure is relieved	
		2. Stage 2 A partial thickness loss of skin layers that presents clinically as an abrasion, blister, or shallow crater	
		3. Stage 3 A full thickness of skin is lost, exposing the subcutaneous tissues—presents as a deep crater with or without undermining adjacent tissue	
		4. Stage 4 A full thickness of skin and subcutaneous tissue is lost, exposing muscle and/or bone	
3.	HISTORY OF RESOLVED/ CURED PRESSURE ULCERS	Resident has had a pressure ulcer that was resolved/cured in last 90 days	
		0. No 1. Yes	

SECTION P. SPECIAL TREATMENT AND PROCEDURES

1.	SPECIAL TREATMENTS AND PROCEDURES	SPECIAL CARE—Check treatments received during the last 14 days	
		Chemotherapy	a.
		Radiation	b.
		Dialysis	c.
		Suctioning	d.
		Trach. care	e.
		IV meds	f.
		Transfusions	g.
		O ₂	h.
		Other	i.
		NONE OF ABOVE	j.
		THERAPIES—Record the number of days each of the following therapies was administered (for at least 10 minutes during a day) in the last 7 days:	
		Speech—language pathology and audiology services	k.
		Occupational therapy	l.
		Physical therapy	m.
		Psychological therapy (any licensed professional)	n.
		Respiratory therapy	o.
2.	ABNORMAL LAB VALUES	Has the resident had any abnormal lab values during the last 90-days?	
		0. No 1. Yes 2. No tests performed	
3.	DEVICES AND RESTRAINTS	Use the following codes for last 7 days:	
		0. Not used	
		1. Used less than daily	
		2. Used daily	
		Bed rails	a.
		Trunk restraint	b.
		Limb restraint	c.
		Chair prevents rising	d.

Figure 4 – Continued

MDS QUARTERLY REVIEW

A2.	RESIDENT NAME			
		(First)	(Middle Initial)	(Last)
A3.	SOCIAL SECURITY NO.			

QUARTERS

1 2 3

B2.	MEMORY	(Recall of what was learned or known) a. Short-term memory OK—seems/appears to recall after 5 minutes 0. Memory OK 1. Memory problem b. Long-term memory OK—seems/appears to recall long past 0. Memory OK 1. Memory problem			
B4.	COGNITIVE SKILLS FOR DAILY DECISION-MAKING	(Made decisions regarding tasks of daily life) 0. Independent—decisions consistent/reasonable 1. Modified Independence—some difficulty in new situations only 2. Moderately Impaired—decisions poor; cues/supervision required 3. Severely Impaired—never/rarely made decisions			
C4.	MAKING SELF UNDERSTOOD	(Express information content—however able) 0. Understood 1. Usually Understood—difficulty finding words or finishing thoughts 2. Sometimes Understood—ability is limited to making concrete requests 3. Rarely/Never Understood			
C5.	ABILITY TO UNDERSTAND OTHERS	(Understanding verbal information content—however able) 0. Understands 1. Usually Understands—may miss some part/intent of message 2. Sometimes Understands—responds adequately to simple, direct communication 3. Rarely/Never Understands			
E1.	ADL SELF-PERFORMANCE—(Code for resident's PERFORMANCE OVER ALL SHIFTS during last 7 days—Not including setup)	0. INDEPENDENT — No help or oversight — OR — Help/oversight provided only 1 or 2 times during last 7 days 1. SUPERVISION — Oversight, encouragement or cueing provided 3+ times during last 7 days — OR — Supervision plus physical assistance provided only 1 or 2 times during last 7 days 2. LIMITED ASSISTANCE — Resident highly involved in activity; received physical help in guided maneuvering of limbs or other nonweight bearing assistance 3+ times — OR — More help provided only 1 or 2 times during last 7 days 3. EXTENSIVE ASSISTANCE — While resident performed part of activity, over last 7-day period, help of following type(s) provided 3 or more times: — Weight-bearing support — Full staff performance during part (but not all) of last 7 days 4. TOTAL DEPENDENCE — Full staff performance of activity during entire 7 days			
b.	TRANSFER	How resident moves between surfaces—to/from: bed, chair, wheelchair, standing position (EXCLUDE to/from bath/toilet)			
c.	LOCOMOTION	How resident moves between locations in his/her room and adjacent corridor on same floor. If in wheelchair, self-sufficiency once in chair			
d.	DRESSING	How resident puts on, fastens, and takes off all items of street clothing, including donning/removing prosthesis			
e.	EATING	How resident eats and drinks (regardless of skill)			
f.	TOILET USE	How resident uses the toilet room (or commode, bedpan, urinal); transfer on/off toilet, cleanses, changes pad, manages ostomy or catheter, adjusts clothes			
E3.	BATHING	How resident takes full-body bath/shower, sponge bath, and transfers in/out of tub/shower (EXCLUDE washing of back and hair. Code for most dependent in self-performance.) 0. Independent—No help provided 1. Supervision—Oversight help only 2. Physical help limited to transfer only 3. Physical help in part of bathing activity 4. Total dependence			

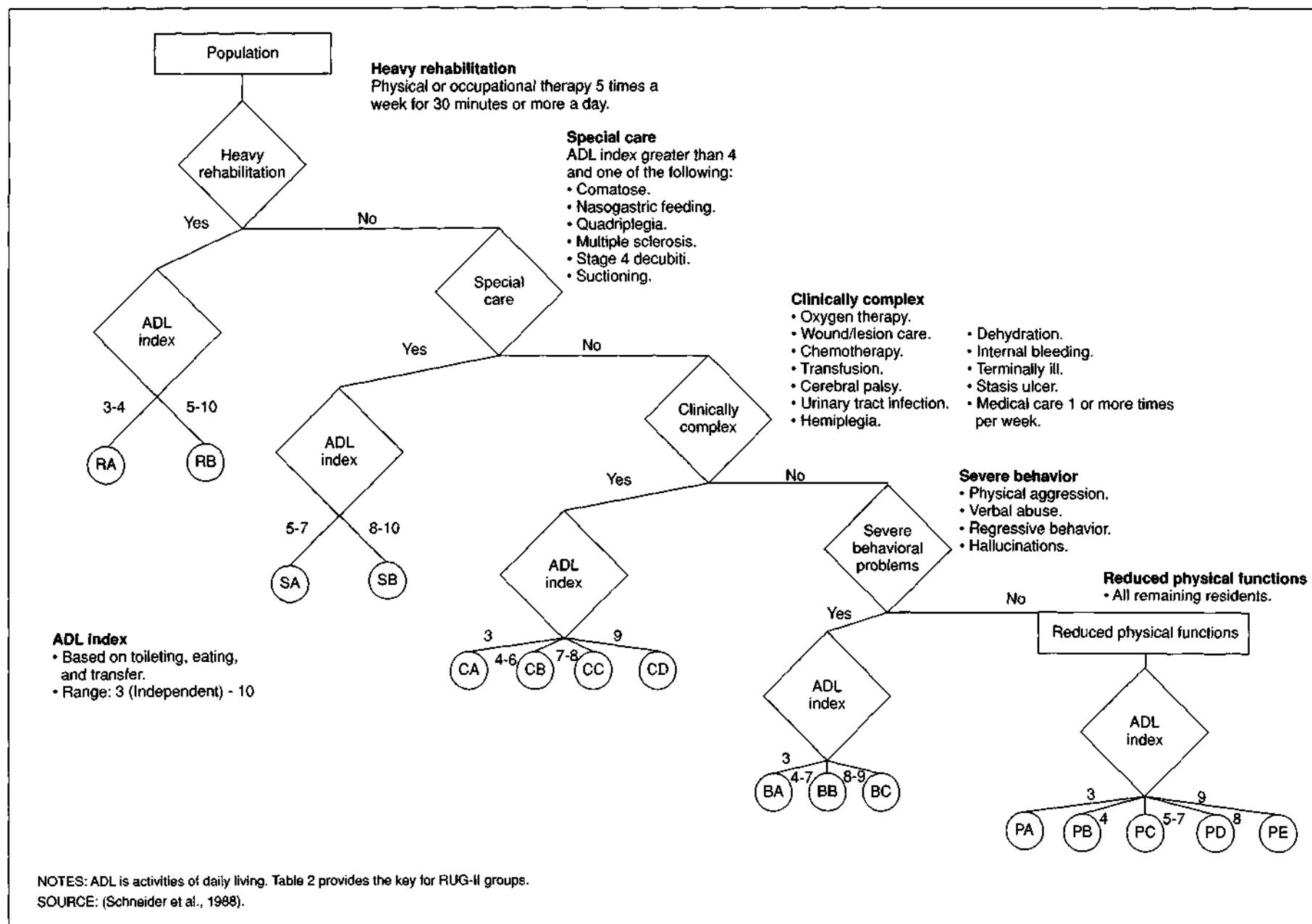
QUARTERS

1 2 3

F1.	CONTINENCE SELF-CONTROL CATEGORIES (Code for resident's performance over all shifts) 0. CONTINENT — Complete control 1. USUALLY CONTINENT — BLADDER, incontinent episodes once a week or less; BOWEL, less than weekly 2. OCCASIONALLY INCONTINENT — BLADDER, 2+ times a week but not daily; BOWEL, once a week 3. FREQUENTLY INCONTINENT — BLADDER, tended to be incontinent daily, but some control present (e.g., on day shift); BOWEL, 2-3 times a week 4. INCONTINENT — Had inadequate control. BLADDER, multiple daily episodes; BOWEL, all (or almost all) of the time			
a.	BOWEL CONTINENCE	Control of bowel movement, with appliance or bowel continence programs, if employed		
b.	BLADDER CONTINENCE	Control of urinary bladder function (if dribbles, volume insufficient to soak through underpants), with appliances (e.g., Foley) or continence programs, if employed		
H2.	MOOD PERSISTENCE	Sad or anxious mood intrudes on daily life over last 7 days—not easily altered, doesn't "cheer up" 0. No 1. Yes		
H3.	PROBLEM BEHAVIOR	(Code for behavior in last 7 days) 0. Behavior not exhibited in last 7 days 1. Behavior of this type occurred less than daily 2. Behavior of this type occurred daily or more frequently a. WANDERING (moved with no rational purpose, seemingly oblivious to needs or safety) b. VERBALLY ABUSIVE (others were threatened, screamed at, cursed at) c. PHYSICALLY ABUSIVE (others were hit, shoved, scratched, sexually abused) d. SOCIALLY INAPPROPRIATE/DISRUPTIVE BEHAVIOR (made disrupting sounds, noisy, screams, self-abusive acts, sexual behavior or disrobing in public, smeared/throw food/feces, hoarding, rummaged through others' belongings)		
J2.	OTHER CURRENT DIAGNOSES AND ICD-9 CODES	(Include only those diseases diagnosed in the last 90 days that have a relationship to current ADL status, behavior status, medical treatments, or risk of death) FIRST QUARTER a. _____ b. _____ SECOND QUARTER c. _____ d. _____ THIRD QUARTER e. _____ f. _____		
L2.	WEIGHT LOSS	(i.e., 5%+ in last 30 days; or 10% in last 180 days) 0. No 1. Yes		
O4.	DAYS RECEIVED THE FOLLOWING MEDICATION	(Record the number of days during last 7 days; enter "0" if not used; enter "1" if long-acting meds. used less than weekly) a. Antipsychotics b. Antianxiety/hypnotics c. Antidepressants		
P3.	DEVICES AND RESTRAINTS	(Use the following codes for last 7 days) 0. Not used 1. Used less than daily 2. Used daily a. Trunk restraint d. Chair prevents rising		

October 15, 1990

Figure 5
Resource Utilization Groups, Version II (RUG-II) classification system



NOTES: ADL is activities of daily living. Table 2 provides the key for RUG-II groups.

SOURCE: (Schneider et al., 1988).