
Charlene Harrington, PhD, Janis O'Meara, MPA, Martin Kitchener, PhD, Lisa Payne Simon, MPH, John F. Schnelle, PhD

Charlene Harrington, PhD, Janis O’Meara, MPA, Martin Kitchener, PhD, Lisa Payne Simon, MPH, and John F. Schnelle, PhD

**Purpose:** This article presents a rationale and conceptual framework for making comprehensive consumer information about nursing facilities available. Such information can meet the needs of various stakeholder groups, including consumers, family/friends, health professionals, providers, advocates, ombudsmen, payers, and policy makers. **Design and Methods:** The rationale and framework are based on a research literature review of key quality indicators for nursing facilities. **Results:** The findings show six key areas for information: (a) facility characteristics and ownership; (b) resident characteristics; (c) staffing indicators; (d) clinical quality indicators; (e) deficiencies, complaints, and enforcement actions; and (f) financial indicators. This information can assist in selecting, monitoring, and contracting with nursing facilities. **Implications:** Model information systems can be designed using existing public information, but the information needs to be enhanced with improved data.

A number of reports have documented the serious quality problems in the U.S. health care system (Chassin & Galvin, 1998; Schuster, McGlynn, & Brook, 1998). The President’s Advisory Commission (1998) called for a national commitment to health care quality, and Congress responded by passing legislation requiring annual reports on the trends in the quality of health care (U.S. Congress, 1999). Three Institute of Medicine (IOM) (2001a, 2001b, 2001c) studies have recommended developing national health care quality reports to inform the nation about specific improvement efforts.

Grading health care providers using report cards is one way to highlight differences in quality of care. Although report cards on performance have been used for hospitals, health plans, and physician groups (Simon & Monroe, 2001), information about nursing facility (NF; homes) quality is only now being developed by the Centers for Medicare and Medicaid Services (CMS) and some states. Older consumers want greater empowerment to make decisions about long-term care, but they need better consumer information, more options, and effective advocacy (Kane & Kane, 2001). NF report cards can provide consumers and others with valuable, comparative data.

This article has three objectives: (a) to present a rationale for making consumer information about NFs available; (b) to provide a conceptual framework for reporting measures of structure, process, and outcomes on NF report cards; and (c) to propose six key elements for an information system that builds on recent federal efforts to provide nursing home information on the Internet. The authors’ framework is designed to be comprehensive to meet the information needs of various stakeholder groups. It is hoped that making data available on NF quality may expose quality problems and encourage NFs to compete on the basis of quality.

**The Need for NF Report Cards**

The nation’s 1.6 million NF residents are one of its most vulnerable groups. Many NF residents suffer from multiple chronic illnesses, and most are unable to feed, bathe, dress, transfer, and toilet without moderate or extensive assistance. Eighty-three percent of NF residents need assistance with 3 to 6 basic activities of daily living (IOM, 2001d, p. 39). The average age of NF residents is 85, and the majority are women (74%). Many NF residents are cognitively impaired (47.2% have dementia; Krauss et al., 1997). Only 17% of residents have a spouse, and some have no children, family, or friends (IOM,
identify areas for quality improvement initiatives.

evaluate and compare facility performance and provider associations can use quality information to care they offer. Administrators, facility staff, and friends and reinforce providers about the quality of findings about quality could reassure family and friends in discussions with the facility administration and staff, which could result in positive family and friends live, bed availability, the payer type, and limited choices in the selection of a facility. The choice of a facility, however, may be constrained by the location in which relatives and friends live, bed availability, the payer type, and other market and informational factors (Mukamel & Spector, 2002). Selection decisions are often made at a crisis point in a short time period when a hospital patient needs to be moved to another location. This situation can limit choices and options.

Second, families, friends, ombudsmen, consumer advocates, health professionals, provider associations, unions, researchers, and the press can use information to monitor NF quality of care. Monitoring facilities for quality of care can be especially important for long-stay residents who may have had limited choices in the selection of a facility. The information about quality problems can be used by family and friends in discussions with the facility administration and staff, which could result in quality improvements. At the same time, positive findings about quality could reassure family and friends and reinforce providers about the quality of care they offer. Administrators, facility staff, and provider associations can use quality information to evaluate and compare facility performance and identify areas for quality improvement initiatives.

How Can Information About NFs Be Used by Different Stakeholders?

NF information can be used by different stakeholders for a variety of reasons. First, it can help consumers and their family and friends select a facility. Hospital and subacute discharge planners, physicians, nurses, social workers, and advocates can use the information to assist individuals and their families in planning and placement decisions. The choice of a facility, however, may be constrained by the location in which relatives and friends live, bed availability, the payer type, and other market and informational factors (Mukamel & Spector, 2002). Selection decisions are often made at a crisis point in a short time period when a hospital patient needs to be moved to another location. This situation can limit choices and options.

Second, families, friends, ombudsmen, consumer advocates, health professionals, provider associations, unions, researchers, and the press can use information to monitor NF quality of care. Monitoring facilities for quality of care can be especially important for long-stay residents who may have had limited choices in the selection of a facility. The information about quality problems can be used by family and friends in discussions with the facility administration and staff, which could result in quality improvements. At the same time, positive findings about quality could reassure family and friends and reinforce providers about the quality of care they offer. Administrators, facility staff, and provider associations can use quality information to evaluate and compare facility performance and identify areas for quality improvement initiatives.

Third, the information can be used by organizations that purchase NF care for their members to help them decide whether or not they want to pay for care at a specific facility or determine whether they are getting value for their payments. Payers who contract for services from NFs include government officials (e.g., the Veteran’s Administration), private health insurance companies, and health maintenance organizations. The information on NF report cards may also prove useful to other organizations, including public and private lenders, investors, risk management companies, and NF insurers in making investment and insurance decisions.

Finally, the information should be useful to public policy makers. For example, if a state has established certain requirements, such as minimum staffing level for facilities, the report card can show which facilities are in compliance with their requirements. The report card could identify other problems, such as high staff turnover rates that policy makers may want to address with legislation or regulation.

Ultimately, report cards cannot serve the interests of all users equally. The most important user of quality information should be considered the potential nursing home resident and his/her family and friends. This means that the type of information and its presentation needs to be tailored primarily for consumers, but having comprehensive information available on NFs can also serve other potential users (Mukamel & Spector, 2002). The downside of having a comprehensive system is that the information may be too complex and detailed for the typical consumer. This points to the need to pay particular attention to presenting data in a way that is easily understood, with simple summaries and visual cues (Hibbard, Slovic, Peters, & Finucane, 2002).

Report cards on NFs should be put on the Internet to facilitate easy access to information. The number of Americans who are likely to use the Internet to find aging-related health care information is rapidly growing with the aging of the population, who are expected to increase from 34.8 million age 65 and older in 2000 to 70.3 million by 2030 (Wetle, 2002). As the older population grows, the number of older Internet users will increase. In 2001, 4.2 million Americans age 65 and over were estimated to use the Internet at home (Administration on Aging, 2002). Others may access the Internet at libraries, senior citizens centers, and the homes of family members and friends. In general, older people have more chronic conditions and disabilities and are more interested in learning about health care and the health care system than people in other age groups (Wetle, 2002).

Federal and State Efforts to Provide Consumer Information on NFs

In 1999, CMS created an Internet-based NF information system that is part of the Medicare website called www.Medicare.gov/NHCompare/
(see the President’s announcement in U.S. Department of Health and Human Services, 1998). Using administrative data primarily from the Online Survey Certification and Reporting (OSCAR) system, it provides comparison data for all 16,500 NFs in the United States that are certified to provide Medicare and Medicaid services. It was the first major federal effort to inform the public about NFs and includes basic information about facilities (e.g., location, bed size, occupancy), residents (e.g., percentage with pressure sores and other conditions), staffing, and deficiencies. The information is obviously in demand, because the website receives approximately 100,000 visits a month (U.S. House of Representatives, Committee on Government Reform, 2002).

The NHCompare website is continuing to be developed by CMS. A recent report by the U.S. House of Representatives (2002) concluded that the CMS website was misleading consumers because it did not report findings from complaint investigations. In response, CMS added the complaint information to the website in the spring of 2002. CMS has also been developing a set of clinical quality indicators (QIs) for the website using advice from the National Quality Forum’s consensus committee established to make recommendations to CMS on quality indicator reports. In the spring of 2002, CMS began testing QIs on the website in six pilot states (Florida, Colorado, Maryland, Ohio, Rhode Island, and Washington; see NHCompare website; see later discussion; Morris et al., 2002). CMS reported on QIs in all states in the fall of 2002. Many improvements have been made in the CMS NHCompare website, but it could be improved by rating facilities, interpreting the information, and guiding consumers in selecting and comparing facilities.

There is a significant amount of interest in providing information about NF care to the public via the Internet. A recent Internet survey found that 25 states have developed their own NF websites (Harrington et al., 2002). These websites vary in the type and amount of information they provide; some states provide information similar to the Medicare NHCompare website, whereas others go beyond it in providing additional state-specific information. A number of consumer advocacy groups and private commercial sites have created websites as well. The California HealthCare Foundation developed a comprehensive website for California, launched in the fall of 2002 (www.calnhs.org).

**Conceptual Model for a Consumer Information System for NFs**

Although it is not difficult to demonstrate the need for consumer information, it is more complicated to develop a model of quality that should be included in such a system. Quality can be considered from Donabedian’s (1980) multidimensional framework that developed structural, process, and outcome measures. Structural measures are those that describe the characteristics of facilities, such as size, profit status, and staffing levels. These measures are the most commonly used because they are generally more available and easier to measure than process and outcomes variables, but they are also less direct measures of quality (Ramsay, Sainfort, & Zimmerman, 1995). Process measures are those that describe the process of care provided. These measures include nursing care procedures, such as those to prevent pressure ulcers and weight loss. The outcome measures are the most difficult to measure because they focus on the results of care. This is especially difficult with NF residents who may be in declining health.

Using this framework, we have developed a comprehensive model for a consumer information system that includes structure, process, and outcomes measures. The structural measures include: (1) facility characteristics and ownership; (2) resident characteristics; (3) staffing indicators; and (4) financial indicators. The process and outcome measures include: (1) deficiencies, complaints, and enforcement actions; and (2) clinical QIs. The state survey agencies evaluate the process and outcomes of NF care and may issue deficiencies and take enforcement actions where standards are not met. CMS developed 24 clinical QIs to measure both process and outcomes of care at the resident level (Ramsey et al., 1995; Zimmerman et al., 1995). New QIs have been developed, along with a subset of the original QIs to measure outcomes of NF care (Morris et al., 2002). Some QI measures are targeted on short-term postacute residents, whereas others are more appropriate for long-stay residents. All of these measures can be useful for reporting quality to consumers.

The structural measures may be associated with process and outcome measures, but they are not direct measures of quality. Although the process and outcome measures may be more important than the structural measures, they are presented in the order shown because consumers are more accustomed to considering the basic characteristics of facilities rather than the process and outcomes of quality. The rationale and elements of each of the components follows.

**Structural Measures of Quality**

*Facility Characteristics and Ownership*

Facility characteristics show whether an NF meets an individual’s needs and preferences, and they can be associated with quality of care and quality of life in facilities. These characteristics are correlates of quality, but may not necessarily be determinants of quality, and quality can vary widely within the categories.
Location. — Historically, consumer selection of an NF has been primarily based on geographic location, that is whether the facility was located near an individual’s home or the home of relatives or friends. Nurse staffing levels, the percentage of residents with negative outcomes, and deficiencies vary by geographical areas (Harrington & Carrillo, 1999; Harrington, Carrillo, Mullan, & Swan, 1998, 2000a; Zinn, 1993b, 1994). Although quality varies by location, the specific relationships between location and quality need more research.

Type of Facility and Services. — Skilled nursing facilities (SNFs) provide intensive 24-hour nursing care and primarily serve Medicare residents. NFs or combination SNFs and NFs, certified for Medicare and Medicaid, also offer 24-hour nursing services that are usually less intensive than SNFs. Consumers need to know whether or not a facility is certified for Medicare and/or Medicaid if they intend to have care paid for by one or both programs, either initially or later as private resources are exhausted. Facilities may offer special services, such as intermediate care, psychiatric services, subacute care, or hospice care. The type of facility and services provided should match the needs of the resident.

Size. — There are relationships between facility size and quality, but the findings from various studies are mixed. Large facilities have been found to have more deficiencies (Harrington et al., 2000b), more restraint deficiencies (Castle, 2000, 2001), and poorer outcomes (such as higher pressure sore rates and restraint use; Zinn, Aaronson, & Rosko, 1993c; Zinn, 1994) than small facilities, perhaps because large facilities may be more difficult to manage. On the other hand, better outcomes on mental status measures were found in large facilities (Porell, Caro, Silva, & Monane, 1998). Size can also be a matter of preference; large facilities may have an institutional feel, whereas small facilities may offer more personal attention. Large facilities may have better-trained staff and offer more amenities than small facilities. Organizational structure, management factors, staff training, and amenities are probably more important than size, but information on these factors is not readily available from public information sources.

Occupancy Rates. — Although NF options may be limited in some areas, many regions have facilities with low occupancy rates, giving consumers a choice among facilities (Harrington et al., 2000a). Occupancy rates may help predict whether or not a facility will have a waiting list, but the implications for quality are mixed. Castle (2001) showed higher use of restraints, more pressure sores, and greater use of psychoactive drugs in facilities with higher occupancy rates. Facilities with lower occupancy rates are associated with higher mortality rates (Zinn et al., 1993c), higher nurse staffing levels, less restraint use, and fewer residents that are not toileted (Zinn, 1993a, 1994). Low occupancy rates could also be a reflection of poor quality rather than the cause of poor care. Cost studies show a strong negative relationship between occupancy and average facility costs and financial problems (Bishop, 1980; Kitchener, Bostrom, & Harrington, 2002a; Ullmann, 1984).

Hospital-Based. — Nationwide, about 10% of NFs are owned or operated by hospitals (Harrington et al., 2000a). In general, hospital-based facilities provide care for Medicare and short-term postacute care residents, and they have been shown to have higher staffing levels (Cohen & Spector, 1996) than freestanding facilities that often focus on long-stay residents. The quality of the staffing data from hospital-based facilities, however, may be more problematic than from free-standing facilities. Hospital-based facilities may also be more likely to use restraints and receive restraint deficiencies than freestanding facilities (Castle, 2000).

Ownership Type. — Owners make decisions about how the facility is run and resources used. Sixty-seven percent of the nation’s NFs are investor-owned (Harrington, Woolhandler, Mullan, Carrillo, & Himmelstein, 2001), creating an incentive to maximize net revenues. Nonprofit NFs are associated with higher staffing levels, better quality of services (Aaronson, Zinn, & Rosko, 1994; Harrington et al., 2001; Harrington, Zimmerman, Karon, Robinson, & Beutel, 2000c), and a lower probability of death and infection than for-profit NFs (Spector, Seldon, & Cohen, 1998). For-profit facilities have higher percentages of residents that are restrained, catherterized, and not toileted, and lower numbers of registered nurses (RNs) per resident than nonprofits (Zinn, 1993a, 1994; Zinn et al., 1993c). Because quality can vary by ownership, however, the type of owner is best considered in combination with QIs.

Owner Name and Stability. — Some owners may have a history of quality problems in their facilities, so that consumers may want to avoid facilities with problematic owners (Cabrera & Hefner, 1997; Kitchener et al., 2002a). Therefore, providing consumers with the names of owners is important. Ownership changes can affect the quality of care either positively or negatively. A facility with stable ownership may indicate that it has been successful in its operation over time, whereas a history of frequent ownership changes may reflect quality or financial problems (Kitchener et al., 2002a; Kitchener, O’Neill, & Harrington, 2002b). These data are available from the federal OSCAR database, but are not on the CMS Medicare website.
**Multifacility Chain.**—Ownership information should also include whether the NF is part of a multifacility chain organization, defined by CMS as two or more facilities owned by one company. Fifty-two percent of the nation’s NFs are part of a multifacility chain (Harrington et al., 2000a). Some chains are small and may be owned by a few individuals, whereas others are large and operate in multiple states and internationally (Harrington, 2001). The largest nine chains operate 17% of U.S. nursing home beds (American Health Care Association [AHCA], 1999; Kitchener et al., 2002a). In these and other cases, management decisions may be made at a distant corporate headquarters rather than at the facility level. Because quality varies within and across chains and nonchains, chain ownership should be considered in combination with other indicators of quality.

**Resident Characteristics**

NF residents have different needs that require various levels of care. The characteristics of residents help create the environment of a facility, and they affect resource needs but they would not necessarily impact on the quality of care in facilities. Data on resident characteristics are available for all NFs, but have not been placed on the CMS Medicare NHCompare website.

**Sociodemographic Factors.**—Sociodemographic factors—including age, sex, and ethnicity—may be associated with consumer preferences in facility selection. Higher percentages of the aged 85 and over population in a facility may increase the dependency (case-mix) of residents and the per-patient cost of care (Ullmann, 1990).

**Length of Residency.**—The length of residency is the average amount of time that residents stay at an NF. The majority of NF residents stay for less than 3 months, but many stay for a long period of time. If a long stay is expected, a resident may wish to choose an NF that has a higher percentage of long-term residents than other facilities.

**Resident Dependency Levels (Case-Mix).**—Consumers should have access to information about the dependency levels of NF residents. Resident care needs are determined by resident assessment data collected by each facility. NFs must complete a full assessment and develop a care plan for each resident, using the CMS Minimum Data Set (MDS) form within 14 days of admission (5 days for Medicare residents), and then a partial MDS must be completed quarterly. A full assessment is required annually, when there are significant changes in a resident’s condition. CMS uses the MDS data to classify residents into Resource Utilization Groups (RUGs), on the basis of the amount and type of nursing and therapy staff time needed (Fries et al., 1994). NF residents are separated into 44 RUG categories within seven broad groups: (1) rehabilitation; (2) complex care; (3) extensive care; (4) special nursing care; (5) cognitive problems; (6) behavioral problems; and (7) physical dependency. Each facility can be given a summary score (case-mix index) that indicates the amount and type of care needed. The percentage of residents in the general RUG categories can tell consumers what the typical resident needs are in a facility.

**Staffing Factors**

Staffing levels in NFs are a structural measure for quality of care that may impact the process and outcomes of quality. Studies consistently show the positive relationship between higher nurse staffing levels, especially RNs, and the outcomes of NF care (Aaronson et al., 1994; Bliesmer, Smayling, Kane & Shannon, 1998; Castle, 2001; Cherry, 1991; Cohen & Dubay, 1990; Cohen & Spector, 1996; Harrington et al., 2000c; IOM, 1996, 2001d; Munroe, 1990; Spector & Takada, 1991; U.S. HCFA, 2000). The benefits of higher staffing levels can include lower mortality rates; improved physical functioning; less antibiotic use; and fewer pressure ulcers, catherized residents, and urinary tract infections. Inadequate staffing and improperly trained staff also contribute to poor feeding of residents, poor nutritional intake, undiagnosed dysphagia, bad oral health, resident deterioration, hospitalization, malnutrition, and dehydration (Kayser-Jones, 1997; Kayser-Jones & Schell, 1997; Kayser-Jones, Wiener, & Barbaccia, 1989).

**Hours Per Resident Day (hprd).**—Typically, nurse staffing level information is reported as average hprd (calculated by dividing the total nursing hours worked by the total resident days of care per year). Since 1997, the average U.S. NF has provided a total of 3.5 hprd of RN, licensed vocational nurse (LVN)/licensed practical nurse, nursing assistant (NA), and Director of Nursing time (Harrington et al., 2000a). Of the total time, most (60% or 2.1 hours) is provided by NAs (with 75 hours of training). On average, NAs have 12 residents to care for and RNs and LVNs each must oversee 32 to 34 residents, although these ratios may vary across shifts and on weekends and holidays (Harrington et al., 2000a). Information on staffing is currently available on the CMS website, but the data need to be improved in terms of accuracy and frequency of reporting (CMS, 2001).

Staffing levels vary widely by facility characteristics. SNFs that take only Medicare residents have almost double the staffing of NFs, probably primarily because Medicare pays higher rates than Medic-
adequately staffed. Staffing levels on report cards can be case-mix adjusted to indicate whether each facility is adequate (Fries et al., 1994). A recent CMS (2001) report found that staffing levels for long-stay residents that are below 4.1 hprd could result in negative consequences for residents (1.3 hprd for licensed nurses and 2.8 hprd of NA time). Consumers should be informed about a facility’s staffing levels, as well as the actual number and skill mix (i.e., the number of RNs and LVNs vs. the number of NAs) of nursing staff. Consumers should be able to compare staffing levels and staffing mix with other facilities and against target goals identified in the CMS (2001) report. When actual staffing levels were compared with the target goals recommended by CMS, 97% of all facilities were found to be operating below the desired level in 2001 (CMS, 2001).

**Case-Mix Adjustment for Dependency Levels.**—It is important to take into account the care needs of residents (case-mix) when considering whether staffing levels are adequate (Fries et al., 1994). A number of studies of NFs have shown a strong positive relationship between resident case-mix, nurse staffing time, and cost (Cohen & Dubay, 1990; Fries et al., 1994; Ullmann, 1990). A simulation model created by Schnelle found that NA time should range from 2.8 to 3.2 hprd, depending on the resident care needs (CMS, 2001). If case-mix adjustments for NA time were added to the target goal of 4.1 hprd as recommended by Schnelle (CMS, 2001), the staffing would range from 4.1 to 4.5 hprd. Staffing levels on report cards can be case-mix adjusted to indicate whether each facility is adequately staffed.

**Turnover Rates.**—Turnover rates of staff can affect quality because the rates determine continuity and stability of care. Nurse turnover rates in NFs are high (51%–93% in 1997; AHCA, 1999; IOM, 2001d), and nurse shortages are found across the nation (AHCA, 2001; CMS, 2001). High turnover may result in poor staff morale and shortages of staff and poor quality of care (CMS, 2001). Turnover may be directly related to heavy workloads, low wages and benefits, poor working conditions, and other factors (Bowers & Becker, 1992; IOM, 2001d). Frequent changes in NF management have been shown to result in a high percentage of pressure ulcers, catheters, psychoactive drugs, and a large number of deficiencies (Castle, 2001; Singh, Amidon, Shi, & Samuels, 1996). These data are currently not collected by CMS, but would be valuable to include in a report card.

**Financial Indicators**

Information about a NF’s finances can indicate how management chooses to use resources, and it can indicate financial problems. Although consumers have not traditionally selected facilities on the basis of financial measures, they are concerned about costs and payment for services. These types of indicators may be of particular interest to purchasers of care and policy makers. The relationships between financial and quality measures have not been carefully researched, but financial indicators can be an important consideration. Access to financial data is problematic because CMS only has Medicare cost reports computerized, whereas states have Medicaid cost reports. CMS does not currently include financial indicators on its website. CMS could collect financial data from Medicare and Medicaid cost reports for purposes of monitoring the relationship between quality and financial indicators and for providing financial indicators to the public.

**Percentage of Medicaid, Medicare, and Private Pay Residents.**—Medicare only pays for short-term postacute care. Therefore, many residents pay with personal funds (self-pay) or private insurance. After personal funds have been exhausted or for those who are poor, Medicaid becomes the primary payer. Studies have shown that facilities with higher percentages of Medicaid residents often have quality problems as reflected by more deficiencies (Grabowski, 2001; Harrington et al., 2000a, 2000c, 2001; Nyman, 1987).

**Charges.**—Consumers who are going to pay out-of-pocket want to know what are the private pay charges for NF care. There is a wide variation in daily charges for the same kind of care for private pay and Medicare, with Medicaid generally having the lowest rates. The negative relationship between percentage of Medicaid residents and costs per day can result in facilities discriminating against Medicaid residents (Grabowski, 2001; Harrington et al., 1998; Kanda & Mezey, 1991; Ullmann, 1990). Higher Medicaid rates have been found to be associated with higher staffing and quality in markets without excess demand (Cohen & Spector, 1996; Grabowski, 2001; IOM, 2001d; Mukamel & Spector, 2002; Nyman, 1987).

**Expenses.**—The federal and state government paid for 61% of the $92 billion in NF revenues in 2000 (Levit, Smith, Cowan, Lazenby, & Martin, 2002). Medicare and Medicaid set limits on the total NF reimbursement rates, which can have an impact on the services provided (Cohen & Dubay, 1990; Cohen & Spector, 1996; Swan, Harrington, Studer, Pickard, & deWit, 2000). NF owners and/or managers make crucial decisions concerning expenditures that can affect quality of care. The average...
NF across the nation reported spending $36 per resident day on direct care (nursing care, social and activity services, and ancillary expenses), or 33.5% of total expenditures in 1997 (HCIA & Arthur Andersen, 2000). Facilities spent $16 per resident day (15% of total expenditures) on indirect costs (maintenance and housekeeping and dietary and food expenses) in 1997 (HCIA & Arthur Andersen, 2000). Facilities with higher direct care expenditures may have better quality because they may have more staff, less turnover, and better staff morale, than those that keep direct care expenditures low, although these relationships have not been examined. Direct and indirect expenditures vary widely across NFs within and across states.

Administrative and general costs averaged 26% of total expenditures in NFs across the nation in 1997 (HCIA & Arthur Andersen, 2000). Paying sufficient wages and benefits to administrators may help attract and retain qualified and motivated individuals who may, for example, have the capacity to identify and manage financial problems. On the other hand, administration represents an overhead, which if allowed to become unnecessarily high (e.g., Cabrera and Hefner, 1997; Frisman 1999), could endanger the quality and financial position of the facility. The average cost nationwide for capital (leases and rentals, and interest and depreciation) was about 8% of the total expenditures (HCIA & Arthur Andersen, 2000). High capital costs may arise when corporations or owners incur debts or expand their operations (U.S. GAO, 1999b, 2000). Consumers and payers may wish to know whether NFs spend more or less than average on the different types of activities and in total than the average facility in a region (considering the variations in regional cost of living).

**Wages and Benefits.—**Poor quality of care in NFs has been associated with low wages and benefits and high employee turnover rates (Munroe, 1990; Spector and Takada, 1991). In 1998, the average median hourly wage for NAs was only $6.58 (AHCA, 1999). Facility wage rates increase costs (Dor, 1989; Zinn, 1993a, 1993b, 1994), but higher nurse pay rates may allow facilities to better retain staff and avoid turnover costs related to recruitment and training. Many NF employees have limited or no health benefits, and their wages are substantially lower than hospital wages. It can be expected that the higher the benefits, the more likely that employees will stay in their jobs, and this could mean better quality of care (IOM, 2001d).

**Profits or Losses.—**Profitability (the difference between facility revenues and expenditures; net income or operating margin) is important to all facilities (Zeller, Stanko, & Cleverly, 1997). Some facilities are now primarily reporting their earnings before interest, taxes, depreciation, amortization, and rent. If the numbers are positive, the facility made a profit and it may be financially stable. If the numbers are negative, the facility is operating at a loss, and it may be financially unstable. This could possibly result in quality-of-care problems. Facilities with very high profits may be taking profits at the expense of residents (O’Neill, Harrington, Kitchener, & Saliba, 2002).

**Financial Stability.—**Individuals may be concerned about living in a facility that is insolvent or bankrupt (Kitchener et al., 2002b). In 1999 and 2000, nearly 2,000 of the nation’s NFs were in bankruptcy because of filings by some of the largest chains (Nakhnikian, 2000; Sparks, 1999). Although many of these chains have now emerged from bankruptcy, the financial stability of NFs is a source of concern to the public and policy makers (GAO, 1999b, 2000). A few financially unstable facilities have closed suddenly, and these highly publicized cases have resulted in sudden transfers of residents, causing great distress to residents and their families (Kitchener et al., 2002a). Although CMS does not collect bankruptcy information, it could be a valuable part of a consumer information system.

**Process and Outcome Measures of Quality**

**Deficiencies, Complaints, and Enforcement Actions**

Federal and state standards regarding resident care and safety must be met to receive a state license and/or federal certification to provide Medicare and/or Medicaid services. Each state’s licensing and certification agency surveys (inspects) every NF every 12 to 15 months to determine whether minimum standards are being met (IOM, 2001d). The federal government has 185 quality standards and a number of life safety building standards. States often have their own standards of care and safety that facilities must meet in addition to the federal standards.

**Deficiencies.—**When a NF does not comply with either a federal or state standard (regulation), the facility may be given a deficiency by state inspectors. Surveyors are required to follow established procedures and guidelines to review care and to make a determination about whether the NF meets the minimum regulatory standards. Deficiencies can be grouped into eight distinct categories: quality of care, abuse, resident assessment, resident rights, environment, nutrition, pharmacy, and administration (Mullan & Harrington, 2001). Life safety standards are a separate category. Deficiencies indicate poor quality of care provided by the facility, but the total number of deficiencies may not be as important as the seriousness of the deficiency and whether a repeated pattern occurs.
Scope and Severity.—Federal deficiencies are assigned a rating by surveyors (from A through L) based on a combination of the scope and severity of the problem. There are three scope levels: isolated (a few residents), pattern (more than a few), and widespread (throughout the facility). The severity is a measure of the amount of harm that could occur or has occurred and has four levels: (1) minimal harm means there was no actual harm, but there is potential to harm; (2) more than minimal harm means there was a potential for more than minimal harm; (3) actual harm to residents; and (4) immediate jeopardy is an immediate threat to resident health and safety (U.S. HCFA, 1998). These are included on the Medicare NHCompare website, but they are not presented in a way that makes them easy to understand. Some states also have their own system for identifying and classifying the seriousness of violations, and these are valuable to consumers as well.

Complaints.—A complaint is a formal grievance against a facility that may be filed when someone has an objection to treatment or safety (U.S. HCFA, 1998). Residents, family members, friends, ombudsmen, health professionals, and other interested individuals may file a complaint against an NF. Complaints may be made directly to the facility, to the state licensing and certification program, or to the county/state ombudsman program (IOM, 2001d). Complaints can indicate, to some extent, the degree of consumer dissatisfaction with an NF. Complaints are generally investigated by a visit from state surveyors to the facility, and if substantiated, deficiencies may be given for violations of quality regulations. The number and types of deficiencies given in response to complaints are important information for consumers to have. The CMS website shows the deficiencies given in response to complaints, but not the number and types of complaints.

Enforcement of Deficiencies.—Sanctions may be given as a result of a deficiency by either the state or federal government, depending on the facility’s certification status (U.S. HCFA, 1998; U.S. GAO, 1999a). The federal and state governments have a range of options for issuing sanctions, including imposing civil money penalties (fines), or a temporary hold on new admissions until corrections have been made. Sanctions can be imposed immediately when deficiencies are serious or cause immediate jeopardy to residents, or when the facility has a repeated record of noncompliance (IOM, 2001d). Ultimately, a facility may have its certification for participation in the Medicare and/or Medicaid programs terminated if problems are serious enough and the NF does not correct them, but this occurs infrequently (IOM, 2001d). NFs have a right to appeal deficiencies and sanctions, and sometimes appeals lead to the reversal of even the most severe problems. Although deficiencies are available on the CMS website, enforcement actions related to them are not made available.

Clinical QIs

Clinical QIs show process and outcome measures of quality of care for residents. A set of 24 QIs was developed at the University of Wisconsin (Karon, Sainfort, & Zimmerman, 1999; Zimmerman et al., 1995). These QIs are calculated using information from the individual resident assessments (MDS) submitted quarterly by each facility to CMS, such as weight loss, pressure ulcers, incontinence, physical restraints, and bedfast. The range of high and low QIs vary widely across facilities (Zimmerman et al., 1995). The QIs are used by some state regulators to identify potential quality problems to be examined in the survey process, and they are used by some NFs for their own quality assurance/improvement programs.

Selecting QIs.—A key issue is what QIs to select for consumer information. There are two major sets of QIs that are being considered. One is the 24 existing QIs developed by the University of Wisconsin for CMS (Zimmerman et al., 1995) and the other is the new QIs developed by researchers at Abt Associates for CMS (Abt Associates, 2001; Morris et al., 2002). The National Quality Forum developed a consensus panel that has made recommendations to CMS to include a subset of QIs on its NHCompare website. As noted previously, CMS identified 8 QIs for inclusion on its website. Five QIs are important to long-stay residents (those who are in the facility for more than 90 days): (1) decline in ability to perform daily activities; (2) infection; (3) pressure ulcers; (4) physical restraints; and (5) pain. Another 3 QIs are focused on the needs of short-stay NF residents (those who are discharged in a few days): (1) delirium (with and without adjustment); (2) walking improvement; and (3) pain (Morris et al., 2002). Final decisions on the selection of QIs were based on the findings from the validation studies of QIs.

Accuracy.—The QIs are based on self-reported MDS data submitted by NFs. Some studies have found accuracy problems in the way the resident assessments are conducted and the forms completed (OLG, 2001a, 2001b), and some state survey agencies do little to audit the accuracy of the MDS data (GAO, 2002). Moreover, facilities may have an incentive not to report quality problems, because it could result in more attention by state surveyors during the survey process. At the same time, facilities have a financial incentive to report higher acuity levels (case-mix) to maximize their Medicare re-
imbursement under the Medicare prospective payment system and in those states that use case-mix reimbursement for Medicaid. Approaches to improve the accuracy of the MDS and QI data are needed (GAO, 2002; IOM, 2001d; OIG, 2001a, 2001b).

**Validation.** — The QIs were tested when they were established for use in the survey process by state agencies (Karon et al., 1999; Zimmerman et al., 1995). The QIs, however, were not tested to determine whether they are directly associated with the processes of nursing care, nor were they tested to determine what threshold level would be sufficient to rate the quality of care in a facility for consumers. To ensure that the QIs can be used fairly for all NFs in a report card, the QIs need further validation and testing to determine how accurately they predict poor quality of care. Schnelle (2002) tested 7 QIs in a sample of 30 California NFs that are included in the California HealthCare Foundation website. CMS also validated a set of QIs for their website (Morris et al., 2002). The methodological issues of validating the QIs and establishing reporting thresholds are beyond the scope of this paper. Most observers consider that public reporting of the QIs should incorporate stringent standards, so that only those indicators found to be accurate, reliable, and valid would be included in a consumer information system.

**Risk Adjustment and Other Issues.** — Some of the original QIs were developed with risk adjusters to take into account the increased probability of having some conditions (Zimmerman et al., 1995). CMS developed some new risk adjustment procedures for the QIs that they pilot tested for consumer information (Morris et al., 2002). The risk factors and risk adjustment procedures for the QIs are critical considerations and extremely complex, and these issues are beyond the scope of this paper. For a detailed review of risk adjustment issues, see Mor and colleagues (2002) and Mukamel and Spector (2002). Researchers need to resolve these technical issues to determine what risk adjustments are needed for those QIs that are used in public information systems. There are many other technical issues that need to be resolved for reporting QIs to consumers. These include the sample size and stability issues, ranking issues, selection bias, ascertainment bias, and other issues (see Mor et al., 2002).

The QIs can be valuable components of a consumer information system (Schnelle, 2002). Facilities with better outcomes (lower QIs) can be differentiated between those with average QIs or poorer outcomes (higher QIs). If a facility has poor outcomes, this could alert consumers to be cautious. Consumers may also use the QI information during an NF visit to ask detailed questions of staff about specific concerns (e.g. weight loss, pressure ulcers). Reporting such information can help facilities focus on improving resident outcomes.

**Discussion**

Consumer information on NF quality is increasingly becoming more available. There are a number of stakeholders who want and would use the information, although not all users would want the same type and degree of information. The federal government has created a website that makes information on NFs readily available. Although this is an important first step, more comprehensive, reliable information is needed to prevent misleading the public and to provide information that will allow consumers to make informed choices and to monitor quality in facilities. The data made available on NF consumer websites need to be as inclusive and accurate as possible. Much can be done to improve the quality of the data available and to make the data more accessible and meaningful to the public.

The issue of what information to provide is evolving from the current work of researchers and CMS. Staffing data are important information for consumers to have because if staffing levels are inadequate, the quality of care provided will be less than optimal (CMS, 2001). The deficiency, complaint, and enforcement action data are also important information for consumers to have as they represent the judgment of outside evaluators. Clinical QIs can be vital elements to include as process and outcome measures when developing a NF report card or performance reporting system. Structural measures, such as facility characteristics and resident characteristics, can be reported to help consumers find a facility that meets their preferences and some of these have been shown to be related to quality. Financial information is also needed to more fully inform consumers how resources are utilized and ultimately about a facility’s financial stability. States and CMS could develop and publish financial indicators that are related to quality to inform the public. This paper has developed the rationale and the approach for designing a comprehensive consumer information system that could allow consumers to compare, select, and monitor NFs on the basis of quality. The new Internet websites need to go beyond providing simple information to helping consumers with rating facilities, interpreting the information, and guiding consumers in selecting and comparing facilities.

**References**

