

Quality Measurement Environmental Scan

Development, Implementation, and Maintenance of Quality Measures for the Programs of All-Inclusive Care for the Elderly (PACE)

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Quality Measurement Environmental Scan for the Programs of All-Inclusive Care for the Elderly

Introduction

The Programs of All-Inclusive Care for the Elderly (PACE) is an innovative, capitated benefit for frail elders, which Congress enacted as part of the Balanced Budget Act (BBA) of 1997. PACE features a comprehensive service delivery system that integrates funding from both Medicare and Medicaid. The PACE care delivery model provides community-based care to individuals meeting at least three of the four eligibility criteria. Participants must (1) be age 55 or over, (2) be State-certified as nursing-home eligible, (3) live within the PACE service area, and (4) be capable of living safely in the community with the support of PACE services (at the time of enrollment). Since On Lok launched the idea in San Francisco in the early 1970s, PACE programs have spread to 104 locations in 31 States (National PACE Association, 2014).

The frail elderly participants who receive care from PACE programs, as well as their caregivers and families, expect and deserve the highest quality care possible. According to the National PACE Association (NPA) (2014), the PACE model applied at the Nation's PACE sites effectively preserves wellness, supports healthy outcomes, and promotes quality care. This is partly because participants, providers, and payers share aligned incentives. If a PACE participant requires a higher level of care, including acute, rehabilitative, or long-term nursing home care, the PACE program pays for and continues to coordinate that care. For example, the average PACE participant spends less than 3 days in a hospital in a given year, which reduces participant suffering, promotes providers' quality of care, and saves payers' money.

Results from independent evaluations conducted since the BBA of 1997 made PACE a permanent program suggest that it is effective in improving participants' outcomes. The most prominent finding is that PACE reduces hospital usage. From the 1998 evaluation of PACE conducted by Abt Associates (Chatterji, Burstein, Kidder, & White, 1998) and continuing through to the Meret-Hanke's 2011 evaluation, PACE participants had consistently and significantly lower hospital usage than did participants in other dual-eligible programs (3.2 days fewer per 6 months and 0.6 days fewer per month alive, respectively.)

Hospital usage is just one measure of quality for comparison among PACE programs. From the findings above, readers can see that the measures, while comparable, are not standardized. Because there are no requirements for quality measurement and its standardization, standardized measures either do not exist or are not consistently applied among programs. The Econometrica Team, under contract to the Centers for Medicare & Medicaid Services (CMS), is adapting health care quality metrics from other settings to the PACE setting in order to begin the process of setting such standards. The purpose of the literature and measure review that follows is to provide a foundation of understanding so that the Technical Expert Panel (TEP) can make effective recommendations for said adaptation. This TEP will convene with the purpose of assisting CMS in ensuring that measures adapted are consistent with PACE participants' needs, measure the intended targets, and are deployable at PACE centers. Further, the metrics must make efficient and effective use of clinicians' time and efforts (i.e., low burden of data capture).

Background and Significance

The PACE program dates back to 1971, when On Lok Senior Health Services designed the project to provide community-based care for the elderly in the San Francisco area. Over the next 10 years, On Lok sought and obtained grant funding from the U.S. Department of Health and Human Services to deliver care to the homes of the frail elderly. Soon after, the Health Care Financing Administration (the predecessor to CMS) allowed On Lok to test a capitation program similar to that used in the current PACE model. The BBA of 1997 made PACE a permanently recognized Medicare and Medicaid provider, enabling States to employ PACE programs as a State Medicaid option. In recognition of the economic success of PACE, Congress enacted an expansion of PACE to rural areas under the Deficit Reduction Act of 2005. PACE has grown considerably; in 2001, 30 PACE programs existed across 19 States. Today, there are 104 PACE programs in 31 States. These programs serve more than 32,000 participants (NPA, 2014).

PACE programs focus on the needs of the frail elderly and their caregivers through a care team located at a PACE center. These centers integrate all necessary care and services (see Figure 1). Operationally, PACE programs employ a unique three-way agreement among CMS, individual States, and PACE centers. CMS and the individual States share equal responsibility for monitoring PACE programs' operations, cost, quality, and effectiveness. PACE programs assume full financial risk and responsibility for participants' health management and are thus incentivized to provide high-quality primary and preventive care and services to avoid acute hospitalization and nursing home placement. In the event that a participant requires hospital admission or rehabilitation, the PACE program maintains continuity of care by following the participant to the hospital or rehabilitation facility either directly or through a contractor.

Upon enrollment in PACE, participants and their caregivers meet with an interdisciplinary team that includes physicians, nurses, therapists, social workers, dietitians, personal care aides, transportation drivers, and others. These providers collaboratively deliver a range of integrated preventive, acute-care, and long-term care services for PACE participants. Regular, daily communication among team members facilitates efficient management of participants' multiple problems, while also allowing rapid detection and effective redress of changes in participants' needs. Such efficient and effective management is necessary to manage care and costs, as the frail elderly who participate in PACE programs usually have multiple chronic illnesses and have a life expectancy of about 30 months (Hansen & Hewitt, 2012).

The primary and ideal care setting is within an individual's home. For that reason, approximately 93 percent of PACE participants live in their homes or in homelike settings, where they receive skilled nursing care, personal care, and supportive services, as well as physical supports such as ramps, grab bars, and other tools to facilitate participant safety. The PACE centers house the care delivery teams that deliver care across settings, providing adult day care at least 3 days each week. These centers provide comprehensive medical and social services at home, residential care settings, and/or inpatient facilities as an alternative for those who would otherwise require nursing home care. Along with clinical care, PACE centers provide a range of long-term care and nonclinical services, such as transportation, physical and occupational therapy, personal care, recreation, socialization, and meals.

Figure 1. PACE Integration and Coordination

Adapted from Dr. Adam Burrows, PACE Medical Director, Uphams Elder Service Plan, Boston, 2011, as cited in Hansen & Hewitt, 2012.

Research findings from many evaluations suggest that PACE programs are quite successful in reducing hospital, rehabilitation, and nursing home utilization. For instance, Chatterji and colleagues' (1998) early study of PACE programs showed that participants use nursing homes and acute-care hospitals less often during the first 2 years after enrollment but added that the magnitude and impact of these advantages decreased over time. Meret-Hanke's (2011) later study found statistically significant results each year, citing that the differences between her study and the earlier study might stem from the earlier researchers' selection of a small sample size instead of a limitation of the PACE programs. An alternative explanation might be the overall frailty of the participants, who at 2 years enrollment are within 6 months of their average life expectancy (Hansen & Hewitt, 2012). Recently, Segelman and colleagues (2014) reported that 30-day all-cause readmission rates among PACE participants are about 3 percent lower than other dual-eligible programs (19 percent versus 22 percent, respectively), suggesting that the model's successes have sustained themselves over time.

Beyond hospital utilization, other outcomes of PACE programs compare favorably to or exceed those achieved by other programs intended for frail elders. For instance, researchers at the Scripps Gerontology Center (Mehdizadeh, Applebaum, Kunkel, & Faust, 2012) compared PACE to Ohio's Medicaid home- and community-based waiver program called PASSPORT. They

found that PASSPORT participants improved in their functional status over time, while PACE participants remained the same. Alternatively, PACE participants improved in instrumental activities of daily living and had generally lower costs across both PACE sites compared to PASSPORT. A study of Kansas PACE programs conducted by the University of Kansas (Chapin et al., 2013) found that in comparison to individuals receiving care under the Home and Community Based Services/Frail Elderly waiver (HCBS/FE), PACE has higher overall costs but lower costs than for comparable patients receiving care in a nursing home. Additionally, they reported that costs at the end of life (within 90 days of death) were 33 percent lower for PACE participants than for HCBS/FE enrollees and 43 percent lower than for nursing home residents. They also reported that while PACE participants went to the emergency department and were hospitalized at the same frequency as comparable individuals, their acute lengths of stay were significantly shorter (2.64 days per year) than for either HCBS/FE enrollees (4.53 days) or nursing home residents (4.99 days). These studies and many others come to a common conclusion: PACE programs save money, extend participants' lives, reduce time spent in non-PACE settings, and generally improve outcomes.

In 2008, Mathematica Policy Research (Cheh & Foster, 2008) completed their evaluation of the transition of PACE from a CMS demonstration to a permanent program. They reported that all sites must complete Quality Assessment/Performance Improvement projects. According to one PACE medical director, the “quality indicators...are subject to continual change, depending on their usefulness for influencing care.” While this might both be true and pragmatic, it is not consistent with identifying and reporting comparable standard measures across sites. Therefore, CMS contracted with Econometrica to adapt comparable standard measures from those existing in other health care settings. The measures ought to provide the best opportunity to deploy existing evidence to reduce participants' suffering while also reducing costs. For this reason, we proposed to address falls, falls with injury, pressure ulcers (prevention and outcomes), and 30-day all-cause hospital readmissions. In the text that follows, we detail each condition and quality metrics that we might adapt to compare them across PACE programs. Experience with quality measurement over the past decade suggests that measurement draws attention to a topic. Once noticed and found lacking, organizations tend to focus on quality improvement around that topic.

Methods of Review

This literature review is part of a larger environmental scan intended for delivery to CMS. The environmental scan will also contain the summarized inputs of all TEP, other experts, and additional measurement reviews. The authors of this review used multiple knowledge resources—including Medline, American Search Premier, the Cumulative Index to Nursing and Allied Health Literature, PubMed, and Google Scholar—to identify and access the literature used in this review. We also used informed, but not systematized, keywords and phrases to find the appropriate literature, as well as experience and heuristics to select the chosen documents. Finally, we accessed the Centers for Disease Control and Prevention (CDC) WISQARS database to determine the extent of falls with injury. As such, we do not claim to present a comprehensive literature synthesis, but rather a pragmatic overview of the knowledge available for the chosen topics with the purpose of informing lively discussion focused on selecting quality measures and improving measurement. We welcome the TEP's recommendations for additional literature and alternative perspectives on the literature.

Results for Chosen Measures

Falls

Background

This review intends to assess the methodology currently used to measure falls and falls with injury as reported in primary and grey literature. It will also present evidence of the economic impact of these incidents and their importance as a performance and safety indicator.

Fall and injury prevention is an important challenge for the frail elderly and worthy of considerable time and resource investment by health care providers and clinicians. Falls are the leading cause of fatal injury for people over age 65 and the most common cause of nonfatal trauma-related hospital admissions (CDC, 2013a). Nearly one-third of community-dwelling individuals in this age group fall each year (Currie, 2008). In 2013, this accounted for nearly 2.5 million injury falls—with nearly two-thirds of this number experienced by females (CDC, 2013). Injuries from falls include fractures, traumatic brain injury, and other internal trauma. Internal injuries led to 28 percent of fall-related fatalities (CDC, 2013a).

Falls pose a significant economic burden as well. In 2012, fall-related injuries cost the Nation more than \$30 billion, with the costs expected to nearly double by 2020 (CDC, 2013a). The costs to treat an individual injured by a fall average \$17,500, excluding possible legal fees (Shumway-Cook, Ciol, Hoffman, Dudgeon, Yorston, & Chan, 2009). Hospitalization costs for an injury fall exceeded \$34,000 in 2012. The most serious and costly fall-related injuries are hip fractures, which account for 44 percent of hospitalization costs. The elderly also require longer healing times and longer treatment durations, causing subsequent losses of independence and functional capacity.

The number of nonfatal falls has increased by 34 percent in the last decade, from 1.85 million in 2004 to nearly 2.5 million in 2013 (CDC, 2013). Falls are an increasingly frequent and costly public health problem that requires intervention. CMS identifies falls as preventable events that should never occur. At present, CMS does not require PACE centers to measure falls, in part because there is no standardized falls or falls with injury metric. We will outline some of the literature addressing this topic, as well as review the most likely quality measures for PACE adaptation.

Methodology

For this literature review, the Econometrica Team conducted a search in Google Scholar, ProQuest, and EBSCO using the keywords “patient falls” and “falls with injury” combined with the terms “measure” or “measurement” and “elderly” for the period 2005–2014. From this, we were able to obtain more than 5,000 candidate papers, most of which addressed falls prevention and risk factors. Econometrica Team member University of Kansas Medical Center Research Institute (KUMCRI) authored or informed a surprising number of papers (n=608), due to their role as contractor for the National Database of Nursing Quality Indicators (NDNQI).

A large proportion of the journal articles (n=1,010) used or referenced meta-analysis as their methodology, suggesting a high level of research rigor. Most articles from this group (n=998) addressed the influence of medications on falls, while only 338 papers addressed the definition

of and screening for falls. In addition to the primary literature sources, the authors reviewed grey literature from Web sites posted by the CDC, National Council on Aging, Agency for Healthcare Research and Quality (AHRQ), American Heart Association, American Stroke Association, and Biomed Central.

Results

While most individuals would recognize a fall, quality measures require specific definitions. For the purposes of the PACE quality measurement project, we reviewed several definitions. Among the setting-based definitions, NDNQI and the Ambulatory Surgical Centers Quality Collaboration (ASCQC) have posed definitions to the National Quality Forum (NQF), and the AHRQ posed a definition on the National Quality Measures Clearinghouse (NQMC). For inpatient settings, the NDNQI (2012) proposed the following definitions:

A **patient fall** is an unplanned descent to the floor with or without injury to the patient, and occurs on an eligible reporting nursing unit.* [For reporting purposes,] include falls when a patient lands on a surface where you wouldn't expect to find a patient. All unassisted and assisted falls are to be included whether they result from physiological reasons (fainting) or environmental reasons (slippery floor). Also report patients that roll off a low bed onto a mat as a fall.

* The nursing unit area includes the hallway, patient room, and patient bathroom. A therapy room (e.g., physical therapy gym), even though physically located on the nursing unit, is not considered part of the unit (pp. 13–14).

NDNQI excludes falls sustained by visitors, students, and staff members. It also excludes falls experienced by patients “on units not eligible for reporting” (e.g., pediatric, psychiatric, obstetrical) and “patients from eligible reporting units..., [but] not on [the eligible] unit at time of the fall” (e.g., patient falls in radiology department).

Assisted fall: A fall in which any staff member (whether a nursing service employee or not) was with the patient and attempted to minimize the impact of the fall by easing the patient's descent to the floor or in some manner attempting to break the patient's fall, e.g., when a patient who is ambulating becomes weak and the staff lowers the patient to the floor. In this scenario, the staff was using professional judgment to prevent injury to the patient. A fall that is reported to have been assisted by a family member or a visitor counts as a fall, but does not count as an assisted fall. “Assisting” the patient back into a bed or chair after a fall is not an assisted fall (p. 14).

To rate the extent of injury from a fall, NDNQI recommends the following guidelines:

- None – Patient had no injuries (no signs or symptoms) resulting from the fall, if an x-ray, CT scan, or other post-fall evaluation results in a finding of no injury.
- Minor – Resulted in application of a dressing or ice, cleaning of a wound, limb elevation, topical medication, bruise, or abrasion.
- Moderate – Resulted in suturing, application of steri-strips/skin glue, splinting, or muscle/joint strain.

- Major – Resulted in surgery, casting, traction, required consultation for neurological (basilar skull fracture, small subdural hematoma) or internal injury (rib fracture, small liver laceration), or patients with coagulopathy who receive blood products as a result of the fall.
- Death – The patient died as a result of injuries sustained from the fall (not from physiologic events causing the fall) (p. 15).

The AHRQ NQMC inpatient falls definition includes the total number of hospitalized patients who fall during their hospital stay divided by the total number of inpatient days * 1,000, giving the rate of inpatient falls per 1,000 patient days. This measure has no exclusions specified (AHRQ, 2012).

The definition proposed by ASCQC differs slightly from that used by NDNQI, stating that a fall is “a sudden, uncontrolled, unintentional downward displacement of the body to the ground or other object, excluding falls resulting from violent blows or other purposeful actions” (ASCQC, 2014). As with NDNQI, the ASCQC definition is setting specific—applying only to ambulatory surgical centers (ASC) admissions. This measure uses a denominator of all ASC admissions during the period of admission.

These definitions support acute-care settings for rate reporting using the denominator “per 1,000 patient days” or “per 1,000 admissions,” respectively. While useful, these definitions do not adequately define the falls or fall locations experienced by PACE participants.

In addition to classifying falls simply by location, Currie (2008) recommends classifying falls into more detailed categories, giving increased importance to cause and body position. These categories include the following:

- Extrinsic falls – Caused by environmental factors.
- Intrinsic falls – Caused by impaired balance or other subject-specific factors.
- Bipedal falls – From a standing or near-standing position.
- Nonbipedal falls – From a non-standing position, such as falls from beds or chairs.
- Nonclassifiable – Because of unclear or insufficient information.

While not all definitions for falls completely agree and none addresses home or non-surgical ambulatory settings, there is relative consensus on what constitutes a fall. There is also a useful categorization for injuries sustained in a fall. These results suggest that we could adapt existing acute or ASC measures to the home. The addition of intrinsic or extrinsic means might add some value to the falls and falls with injury measures but might also add measurement burden. Using an adaptation of an existing acute care or ASC measure might harmonize measurement across settings and allow reasonable comparisons among settings.

Discussion

Measurement of falls and injury falls will differ in the PACE program, compared to measurement in acute and ASC settings, because PACE programs provide services in the home, community, sub-acute, acute, and long-term settings and at PACE centers. A useful measure

must be comparable across settings; reliably measure rates; have a low measurement burden; and be useful to participants, CMS, and the program.

We propose to adapt these measures with a numerator of all PACE participant falls in all settings, weighted by proportion of time spent in each setting (e.g., falls at home * 0.75 + falls at PACE center * 0.15 + falls in other PACE * 0.05 + falls in non-PACE setting * 0.05). We propose to develop a denominator similarly weighted by proportion of time spent across settings (e.g., time at home * 0.75 + time at PACE center * 0.15 + time in other PACE * 0.05 + time in non-PACE setting * 0.05). This would create a weighted ratio that does not over- or undervalue the falls rate in any setting. It would also allow centers to compare based on their specific needs. For instance, a rural PACE program with longer transportation times will adjust “other PACE” to a higher proportion, while a program with a higher acuity requiring more intensive center-based care might adjust the proportion of time at “PACE center” upward. This would allow valid comparisons among PACE sites.

The biggest challenge will come from the high likelihood of underreporting in the home setting. The literature suggests that underreporting of falls in the home is problematic. Reasons include differences in definitions of falls among the elder, caregivers, and providers; cognitive issues that limit recall (Freiberger & de Vreede, 2011); fear of loss of independence (Shumway-Cook, Ciol, Hoffman, Dudgeon, Yorston, & Chan, 2009), and many elderly adults’ belief that such incidents are no one else’s business but their own. Freiberger and de Vreede suggest coming to an agreement with the aged individual over what constitutes a fall to ensure a shared definition. They further suggest that some elders might benefit from the employment of a falls calendar and regular communication between the elder and caregivers to mitigate the cognitive limitation. Mitigation of the remaining underreporting issues depends heavily on the individual’s feelings of power/empowerment, as well as a combination of excellent communication and trust among the elder and his or her caregivers, family, clinicians, and community.

Falls and Related Quality Measures

In a review of measures, the Econometrica Team identified several measures of falls and falls with injury. We list them below with links to their source documentation. In addition, we identified measures of risk, risk screens, and risk management. For the 2015 contract year, we do not propose to adapt risk-related process measures; however, information from them might inform the adaptation of outcome measures. Each measure below carries a current NQF endorsement.

Falls

Patient Fall Rate **Steward:** American Nurses Association (ANA) (NQF 0141) (Outcome).

All documented falls, with or without injury, experienced by patients on eligible unit types in a calendar quarter. Reported as Total Falls per 1,000 Patient Days and Unassisted Falls per 1,000 Patient Days.

Calculation: (Total number of falls / patient days) * 1,000.

<http://www.qualityforum.org/QPS/MeasureDetails.aspx?standardID=1118&print=0&entityTypeID=1>.

Patient Fall**Steward:** ASCQC (NQF 0266) (Outcome).

Percentage of ASC admissions experiencing a fall in the ASC.

Calculation: (ASC admissions experiencing a fall in the ASC / all ASC admissions) * 1000.<http://www.qualityforum.org/QPS/MeasureDetails.aspx?standardID=402&print=0&entityTypeID=1>.**Falls With Injury****Falls With Injury****Steward:** ANA (NQF 0202) (Outcome).

All documented patient falls with an injury level of minor or greater on eligible unit types in a calendar quarter. Reported as Injury Falls per 1,000 Patient Days.

Calculation: (Total number of injury falls / patient days) * 1,000.<http://www.qualityforum.org/QPS/MeasureDetails.aspx?standardID=1119&print=0&entityTypeID=1>.**Percent of Residents Experiencing One or More Falls With Major Injury (Long Stay)****Steward:** CMS (NQF 0674) (Outcome).

This measure reports the percentage of long-stay nursing home residents who experience one or more falls with major injury (e.g., bone fractures, joint dislocations, closed head injuries with altered consciousness, or subdural hematoma) in the last quarter (3-month period). The measure is based on MDS 3.0 item J1900C, which indicates whether any falls that occurred were associated with major injury.

Calculation: Number of long-stay nursing home residents who experienced one or more falls that resulted in major injury / total number of long-stay residents in the nursing facility with residency of >100 days.<http://www.qualityforum.org/QPS/MeasureDetails.aspx?standardID=175&print=0&entityTypeID=1>.

*Falls Risk Assessment***Fall Risk Management (FRM)**

Steward: National Committee for Quality Assurance (NCQA) (NQF 0035) (Process).

Assesses different facets of fall risk management:

- Discussing Fall Risk – The percentage of adults 75 years of age and older, or 65–74 years of age with balance or walking problems or a fall in the past 12 months, who were seen by a practitioner in the past 12 months and who discussed falls or problems with balance or walking with their current practitioner.
- Managing Fall Risk – The percentage of adults 65 years of age and older who had a fall or had problems with balance or walking in the past 12 months, who were seen by a practitioner in the past 12 months, and who received fall risk intervention from their current practitioner.

Calculations: This measure has two rates.

1. Discussing Fall Risk – two denominator possibilities:

- The number of patients who indicated they discussed falls or problems with their current provider / adults age 75 and older who had a provider visit in the past 12 months.
- The number of patients who indicated they discussed falls or problems with their current provider / adults age 65–74 who had a provider visit in the past 12 months and report either falling or having a problem with balance or walking in the past 12 months.

2. Managing Fall Risk:

The number of patients who indicated their provider provided fall risk management / adults age 65 and older who had a provider visit in the past 12 months and report either falling or having a problem with balance or walking in the past 12 months.

<http://www.qualityforum.org/QPS/MeasureDetails.aspx?standardID=1254&print=0&entityTypeID=1>.

Falls: Screening, Risk-Assessment, and Plan of Care to Prevent Future Falls

Steward: NCQA (NQF 0101) (Process).

Clinical process measure that assesses falls prevention in older adults. The measure has three rates: screening for future fall risk, falls risk assessment, and plan of care for falls.

Calculations: This measure has three rates.

1. Screening for Future Fall Risk:
Patients who were screened for future fall* risk** at last once within 12 months / all patients aged 65 and over.
2. Falls – Risk Assessment:
Patients who had a risk assessment for falls completed within 12 months / all patients aged 65 years and older with a history of falls.
3. Plan of Care for Falls:
Patients with a plan of care for falls documented within 12 months / all patients aged 65 years and older with a history of falls).

<http://www.qualityforum.org/QPS/MeasureDetails.aspx?standardID=445&print=0&entityTypeID=1>.

Multifactor Fall Risk Assessment Conducted For All Patients Who Can Ambulate

Steward: CMS (NQF 0537) (Process).

Percentage of home health episodes of care in which patients who can ambulate had a multifactor fall risk assessment at start/resumption of care.

Calculation: Number of home health episodes of care in which patients who can ambulate had a multifactor fall risk assessment at start/resumption of care / number of home health episodes of care ending during the reporting period.

<http://www.qualityforum.org/QPS/MeasureDetails.aspx?standardID=831&print=0&entityTypeID=1>.

Pressure Ulcers (Outcomes and Prevention)

Background

This review intends to assess the methodology currently used to evaluate pressure ulcers as reported in primary and grey literature. It will also present evidence of the economic impact of pressure ulcers and their importance as a performance and safety indicator.

According to the National Pressure Ulcer Advisory Panel (NPUAP), a pressure ulcer is localized injury to the skin and/or underlying tissue, usually over a bony prominence, as a result of pressure or pressure in combination with shear. A number of contributing or confounding factors are also associated with pressure ulcers, including individual risk factors such as decreased mental status, exposure to moisture, incontinence, device-related pressure, friction, shear, immobility, inactivity, and poor nutrition. The frail elderly, including PACE participants, are at great risk of pressure ulcer development due to their overall vulnerability in combination with multiple chronic conditions. Additional risk factors inherent in the frail elderly population include advanced age, decreased sensory perception, and hematological and vascular compromise that often lead to poor healing.

Even though the risk to this population is great, with proper assessment and intervention, pressure ulcers are preventable through a combination of risk assessment and application of preventive measures. Because pressure ulcers are highly sensitive to skilled nursing intervention, measurement of their frequency is a useful indicator of quality of care. AHRQ (2011) proposed that the presence of pressure ulcers is an indicator of poor quality of care. About 3 million patients per year develop pressure ulcers.

For several years, CMS and the NQF have focused primarily on inpatient pressure ulcers (HAPU). This is important to PACE for several reasons. First, the availability of NQF-endorsed HAPU quality measures facilitates adaptation of these measures to the PACE program. Second, PACE participants who develop pressure ulcers during a hospital admission will likely return to the PACE setting with that wound. Tracking pressure ulcers developed in PACE and while in the hospital under PACE management will inform PACE programs of possible gaps in care.

The cost of pressure ulcers ranges from about \$9.1 to \$11.6 billion per year, while the average per patient treatment costs range from about \$21,000 to more than \$150,000. In 2007, Medicare estimated that each pressure ulcer added around \$43,180 in costs to a hospital stay for each patient. Additionally, more than 17,000 lawsuits result from pressure ulcers each year, making it the second most common tort after wrongful death. About 60,000 patients die as a direct result of a pressure ulcer each year (AHRQ, 2011).

Methodology

For this literature review, the Econometrica Team conducted a search in Google Scholar, ProQuest, and EBSCO using the keywords “pressure ulcer” and “elderly” combined with the terms “measure” or “measurement,” “risk,” and “prevention” for the period 2005–2015. From this, we were able to identify more than 10,700 candidate papers. As with falls and falls with injury, Econometrica Team member KUMCRI authored or informed numerous papers (n=682), due to their role as contractor for the NDNQI. In addition to the keywords requested, the literature addressed classification, quality measurement, treatment options, costs, and impact on quality of life. Of these papers, we found none that focused on the PACE population; however, four addressed the frail elderly population living in the community. We include these and several others that inform the development of quality measures for this population.

Definition

To ensure a shared understanding of the meaning of pressure ulcers, we have adopted the definition proposed by the NPUAP (2014), which defines the four stages and two additional categories of pressure ulcers:

- **Stage I** – Non-blanchable erythema: This stage causes a localized area of redness that does not turn pale when pressed with a finger.
- **Stage II** – Partial thickness skin loss: This stage causes permanent damage to cells down to the depth of the dermis only.
- **Stage III** – Full thickness skin loss: This stage causes a lesion that extends through the full thickness of the epidermis and dermis.

- **Stage IV – Full thickness tissue loss:** In this stage, the base of the wounds extends into muscle, tendons, or bone.
- **Unstageable/Unclassified — Full thickness skin or tissue loss of unknown depth:** In this category, it is not possible to assess the depth or tunneling of the ulcer, because slough or eschar blocks direct view. Once removed, clinicians will likely reclassify the wound as a Stage III or IV.
- **Suspected Deep Tissue Injury:** As with the unstageable/unclassifiable category, the depth of the wound is unknown, but likely to be greater than Stage III. In this case, a localized area of purple or maroon colored intact skin or blood-filled blister obscures the view of the damaged underlying tissue. Such damage is often due to pressure, shear, or a combination of the two. The tissue immediately surrounding the injury is often painful, as well as differing in firmness and temperature from the more distal tissue.

There are no current pressure ulcer quality measures endorsed by NQF that focus specifically on the PACE population—and very few that address a non-hospitalized population at all. Due to this dearth of measures and, subsequently, data from PACE pressure ulcer prevalence, there is a need for Econometrica (under contract to CMS) to develop such a measure. AHRQ strongly recommends following a six-part framework for evaluating quality measures (see Box 1). These parts include one that recommends that measure development contractors consider whether the measures they create or adapt encourage perverse incentives (i.e., an incentive that rewards bad behavior), gaming, or excess data collection burden.

Box 1. Framework for Evaluating the Quality Indicators

1. **Face validity:** Does the indicator capture an aspect of quality that is widely regarded as important and subject to provider or public health system control? Consensual validity expands face validity beyond one person to the opinion of a panel of experts.
2. **Precision:** Is there a substantial amount of provider- or community-level variation that is not attributable to random variation?
3. **Minimum bias:** Is there little effect on the indicator of variations in patient disease severity and comorbidities, or is it possible to apply risk adjustment and statistical methods to remove most or all bias?
4. **Construct validity:** Does the indicator perform well in identifying true (or actual) quality of care problems?
5. **Fosters real quality improvement:** Is the indicator insulated from perverse incentives for providers to improve their reported performance by avoiding difficult or complex cases or by other responses that do not improve quality of care?
6. **Application:** Has the measure been used effectively in practice? Does it have potential for working well with other indicators?

One unlikely example of perverse incentives to underreport is the NQF-endorsed PSI-3 pressure ulcer measure for which AHRQ is steward. CMS identified pressure ulcers as “never events” for which CMS provides no reimbursement. CMS also promotes public reporting of pressure ulcer incidence/prevalence on Hospital Compare. This combination creates a perverse incentive to underreport. In fact, some experts claim that the PSI-3 underreports the prevalence of pressure

ulcers by as much as 90 percent (Coomer and McCall, 2012; Meddings, Reichert, Hofer, & McMahon, 2013).

Although Stage I pressure ulcers are the most common and most easily treated (NPUAP, 2014), few quality measures report the prevalence or incidence of pressure ulcers below Stage II. Pressure ulcers at all stages cause pain and (short- or long-term) disability and decrease the patient's quality of life. Gorecki and colleagues (2013) developed and psychometrically evaluated a patient-reported measure of quality of life in a sample of 227 patients with pressure ulcers. While the Pressure Ulcer Quality of Life (PU-QOL) instrument did not achieve all of the goals the researchers set for it, the measure shows promise as a self-reported evaluation tool for the influence such a wound has on the quality of life of cognitively intact individuals. The PU-QOL assesses 10 areas, including pain, exudate, odor, sleep, vitality, movement and mobility, activities of daily living, emotional well-being, appearance and self-consciousness, and participation. The tool is comprehensive, having 81 items, and easy to understand, since it uses simple 3-point responses (e.g., 0 – not at all; 1 – somewhat; 2 – a lot). Its comprehensiveness numbers among the tool's limitations, as it is very time-consuming and labor intensive for both the interviewer and the respondent. It also requires that the respondent is awake, alert, and oriented to person, place, time, and purpose.

Orientation of the respondent, while of high value in self-reported evaluations such as the PU-QOL, is not a necessity for a pressure ulcer assessment conducted by a knowledgeable clinician. The level of knowledge among clinicians is a matter of basic and continuing education. According to the results of a literature synthesis conducted by Hidalgo, Fernandez, Torres, Garcia, and Medina (2007), nurses' knowledge of pressure ulcer prevention, risk factors, and treatment ranges from moderate (50 to 85 percent of nurses understand the evidence-based tenets of prevention) to low (54 to 78 percent of nurses provided treatments based on current best evidence). Some of the studies they reviewed suggested that nurses tend to rely on what they learned in nursing school, with little continuing education thereafter. Information learned through formal education within the last 3 years has the biggest influence on nurses' provision of quality care to patients with pressure ulcers. Many nurses who have not continued education apply obsolete practices to patients, such as massaging over bony prominences.

The application of obsolescence is a problem that applies to physicians as well. For instance, nutritional status is an important risk factor in the development of pressure ulcers. Those patients whose nutritional status is poor, as indicated in such physical manifestations as cachexia and in such blood tests as low pre-albumin, need improved nutrition to reduce risk. If the patient cannot or will not eat, many physicians will prescribe enteral nutritional supplements through a nasogastric or percutaneous endoscopic gastrostomy (PEG) tube, even in the face of mounting evidence that such feedings are not only ineffective, but possibly detrimental to the patients' outcomes (Volicer, 2005; van der Steen et al, 2013).

Discussion

Pressure ulcers have a significant economic impact and an even greater impact on a patient's quality of life. The home-based setting and continuing assessments that are inherent to PACE programs might reduce the risk of pressure ulcer development. In fact, the Core Outcome Comprehensive Assessment Data Set-Basic (COCOA-B) project report (Center for Health

Services Research, 2005) suggested the low prevalence of pressure ulcers (4.0 percent) made the measurement of pressure ulcer incidence unnecessary. In the decade since, CMS and other major actors in the health care system have emphasized the influence of quality of life, disability, death, and added cost associated with pressure ulcers, making their measurement a valuable endeavor.

In the PACE setting, with its variability in size, participant abilities, and programmatic differences, the lessons learned in development and implementation of hospital-oriented pressure ulcer measures (such as those developed by the NDNQI) might improve measurement in this environment. Alternatively, the absence of perverse incentives to underreport claims data on pressure ulcers might make the use of a claims-based, PSI-3-like measure worthwhile. Overall, measuring the incidence or prevalence of pressure ulcers among PACE participants wherever they are receiving care is a valuable indicator of quality of care and quality of life. Adapting and harmonizing a measure across PACE programs and settings is important, particularly considering that there are no current measures to evaluate the quality of pressure ulcer prevention and care in the PACE population. Further, the application of measures in conjunction with an educational component providing the sites with a source of latest evidence is likely to improve the participants' outcomes more than the implementation of measures alone.

Pressure Ulcers and Related Quality Measures

In a review of measures, the Econometrica Team identified multiple measures related to pressure ulcers. We provide definitions below under headings that note associated endorsement.

NQF Endorsed

- Pressure Ulcer Prevention and Care – (Process)** Pressure Ulcer Risk Assessment Conducted: Percentage of home health episodes of care in which the patient was assessed for risk of developing pressure ulcers at start/resumption of care. Pressure Ulcer Prevention Included in Plan of Care: Percentage of home health episodes of care in which the physician-ordered plan of care included interventions to prevent pressure ulcers. Pressure Ulcer Prevention Implemented: Percentage of home health episodes of care during which interventions to prevent pressure ulcers were included in the physician-ordered plan of care and implemented.
- Increase in Number of Pressure Ulcers – (Outcome)** Percentage of patients who had an increase in the number of pressure ulcers.
- Percent of High-Risk Residents With Pressure Ulcers (Long Stay) – (Outcome)** This measure reports the percentage of all long-stay residents in a nursing facility with an annual, quarterly, significant change or significant correction MDS assessment during the selected quarter (3-month period) who were identified as high risk and have one or more Stage II–IV pressure ulcer(s). High-risk populations are those who are comatose, impaired in bed mobility or transfer, or suffering from malnutrition.
- Percent of Residents or Patients With Pressure Ulcers That Are New or Worsened (Short Stay) – (Outcome)** This measure reports the percent of short-stay residents or patients with Stage II–IV pressure ulcers that are new or worsened since the prior assessment.

- **Pressure Ulcer Prevalence (Hospital Acquired) – (Outcome)** The total number of patients who have hospital-acquired (nosocomial) category/Stage II or greater pressure ulcers on the day of the prevalence measurement episode.
- **Pressure Ulcer Rate (PSI-3) – (Outcome)** Percent of discharges among cases meeting the inclusion and exclusion rules for the denominator with ICD-9-CM code of pressure ulcer in any secondary diagnosis field and ICD-9-CM code of pressure ulcer Stage III or IV (or unstageable) in any secondary diagnosis field.

NQF Endorsement Removed

- **Pressure Ulcer Prevention Implemented During Short-Term Episodes of Care – (Process)** Percentage of short-term home health episodes of care during which interventions to prevent pressure ulcers were included in the physician-ordered plan of care and implemented.
- **Pressure Ulcer Risk Assessment Conducted – (Process)** Percentage of home health episodes of care in which the patient was assessed for risk of developing pressure ulcers at start/resumption of care.
- **Average-Risk Residents With Pressure Ulcers – (Outcome)** Percentage of residents with a valid target assessment and not qualifying as high risk with pressure ulcers.
- **High-Risk Residents With Pressure Ulcers – (Outcome)** Percentage of residents with a valid target assessment and one of the following inclusion criteria: (1) impaired in mobility or transfer on the target assessment, (2) comatose on the target assessment, or (3) suffer malnutrition on the target assessment who have pressure ulcers.
- **Recently Hospitalized Residents With Pressure Ulcers (Risk Adjusted) – (Outcome)** Recently hospitalized residents with pressure ulcers.

AHRQ National Quality Measures (Not Endorsed by NQF)

- **Pressure ulcer prevention and treatment protocol: percentage of patients, evaluated for pressure ulcer, with documentation of a pressure ulcer – (Process)** This measure is used to assess the percentage of patients, evaluated for pressure ulcer, with documentation of a pressure ulcer.
- **Pressure ulcer prevention and treatment protocol: percentage of patients with documentation in the medical record indicating a risk assessment was done, using specific questions – (Process)** This measure is used to assess the percentage of patients with documentation in the medical record indicating a risk assessment.
- **Pressure ulcer prevention and treatment protocol: percentage of patients with pressure ulcer(s) whose medical record contains documentation of a pressure ulcer treatment plan in their plan of care – (Process)** This measure is used to assess the percentage of patients with pressure ulcer(s) whose medical record contains documentation of a pressure ulcer treatment plan in their plan of care.
- **Pressure ulcer prevention and treatment protocol: percentage of patients with documentation of a pressure ulcer – (Process)** This measure is used to assess the percentage of patients with documentation of a pressure ulcer.

- **Pressure ulcer prevention and treatment protocol: percentage of patients with documentation in the medical record indicating a risk assessment (using the Braden Scale or Braden Q) was completed upon admission** – (Process) This measure is used to assess the percentage of patients with documentation in the medical record indicating a risk assessment (using the Braden Scale or Braden Q) was completed upon admission.
- **Pressure ulcer prevention and treatment protocol: percentage of outpatients with pressure ulcer(s) whose medical record contains documentation of a comprehensive patient assessment and thorough wound evaluation** – (Process) This measure is used to assess the percentage of outpatients with pressure ulcer(s) whose medical record contains documentation of a comprehensive patient assessment and thorough wound evaluation.
- **Pressure ulcer prevention and treatment protocol: percentage of patients with documentation in the medical record that a head-to-toe skin inspection and palpation were completed within 6 hours of admission** – (Process) This measure is used to assess the percentage of patients with documentation in the medical record that a head-to-toe skin inspection and palpation were completed within 6 hours of admission.
- **Pressure ulcer prevention and treatment protocol: percentage of patients with documentation in the medical record that a head-to-toe reinspection and palpation were completed every 8 to 24 hours, depending on the status of the patient** – (Process) This measure is used to assess the percentage of patients with documentation in the medical record that a head-to-toe reinspection and palpation were completed every 8 to 24 hours, depending on the status of the patient.
- **Pressure ulcer prevention and treatment protocol: percentage of at-risk patients with documentation in the medical record that a head-to-toe skin inspection was completed** – (Process) This measure is used to assess the percentage of at-risk patients with documentation in the medical record that a head-to-toe skin inspection was completed.

30-Day Acute Readmissions

Background

The intent of this review is to assess methodologies currently used to evaluate 30-day acute readmissions, as reported in primary and grey literature. This review will explore evidence of economic impact and the importance of 30-day readmissions as a performance and safety indicator. The literature is abundant with studies related to 30-day readmission rates. Study results vary by age, so in providing due diligence to the interests of the PACE program, a pragmatic review of the literature was adopted with a focus on elderly and frail patients age 65 and older. Although the PACE population includes individuals aged 55 to 64, we selected ages 65 and over for the literature review, because parsing out the literature on individuals aged 55 to 64 presents a considerable challenge that does not bring considerable value in return.

Hospital readmissions are costly. According to an analysis of Medicare Data funded by the Robert Wood Johnson Foundation, readmissions among Medicare patients alone cost \$26 billion annually, of which more than \$17 billion pays for preventable return trips (Klees, Wolfe, & Curtis, 2010). This represents an average of \$9.5 million in annual at-risk profit for a 300-bed hospital. Overall, about 15 to 25 percent of people discharged from the hospital will be

readmitted to the hospital within 30 days or less (Goodman, Fischer, & Change, 2013). Although some of these admissions are necessary to complete the cycle of care, Meret-Hanke (2011) and Goodman and colleagues (2013) report that improved longitudinal community-based care and care coordination between hospital and community clinicians could prevent a majority of them. Batty (2010) suggests that readmissions are an indicator of low-quality care resulting from poor or absent follow-up post discharge.

With the PACE focus on the frail elderly, readmissions are an area of considerable interest. In consideration of this, the PACE Final Rule requires a quarterly report of hospital readmissions (Federal Register, Dec. 8, 2005). The Final Rule defines readmissions for the PACE program as “PACE participants readmitted to an acute care hospital within 31 days.” This rule includes emergency (unscheduled) care, defined as “PACE participants seen in the hospital emergency room (including care from a PACE physician in a hospital emergency department) or an outpatient department/clinic emergency” (CMS PACE User’s Guide, 2008).

Segelman and colleagues (2014) reported that 30-day all-cause readmission rates among PACE participants are about 3 percent lower than those reported for other dual-eligible programs (19 percent versus 22 percent, respectively), suggesting that the model’s successes have sustained themselves over time. Some PACE centers report a 16-percent readmission rate, which is 6 percent lower than the national average. This is possibly due in part to PACE programs’ focus on coordination and community support, which research has identified as important success factors in reducing 30-day all-cause readmissions.

Despite PACE programs’ successes in keeping 30-day readmission rates below the national average, the opportunity for improvement continues. According to researchers, the average avoidable readmission rate is 12.6 percent. The most common conditions for avoidable readmissions include congestive heart failure (CHF), pneumonia, chronic obstructive pulmonary disease (COPD), asthma, urinary tract infections (UTI), and diabetes with short-term complications. While these are important conditions, a large proportion of PACE participants suffer from mental illnesses, particularly dementia. These conditions fall into the category of the highest-risk, frail elderly, which increases their risk for readmission (Schwarzkopf et al., 2013). Approximately half of the patients enrolled in PACE programs have a diagnosis of dementia, which results in subsequently higher costs.

Those charged with adapting quality measures to this population must do so in consideration of this high-risk population of patients, but with a focus on community-based treatment and intervention alternatives. While research shows better readmission outcomes for PACE plans compared to hospital-oriented 30-day readmission rates, the potential for quality improvement through standardized measurement processes remains significant. In the sections below, we will outline some of the literature addressing this topic, as well as review the most likely quality measures for PACE adaptation.

Methodology

For this literature review, the Econometrica Team conducted a search in EBSCO for systematic reviews of readmissions studies. We used the major concept “readmission,” limited to publication type “systematic review,” and limited the publication period to 2010–2015. This resulted in 15 candidate papers, which we subsequently reviewed. We conducted additional

searches using Google Scholar and Google to identify 17 additional articles from academic, grey literature, and CMS publications.

Results

Vest and colleagues (2010) conducted a systematic review of 37 studies and noted significant variation in index conditions, readmitting conditions, timeframe, and terminology. Terms used include readmission, potentially preventable readmission, early readmissions, unplanned readmission, or unplanned related readmission. Authors note that definitional variations and methodological challenges limit translation of the current readmissions literature into best practice guidance for health care organizations (Vest, 2010). While acknowledging this current limitation within the literature, we summarize commonalities from systematic reviews of readmissions studies in this section to inform future PACE performance evaluations.

A systematic review of 56 studies focused on unplanned admission and readmission noted that factors consistently associated with increased risk of readmission include age, deprivation, and comorbidity. Additional observed factors include living alone, social isolation, dependency, cognitive impairment, and functional problems or frailty. Organizational and socioeconomic variables are analyzed infrequently, but when these factors are included, they often emerge as key precursors of admissions (Walsh, 2014). A systematic review focused on readmissions after colorectal surgery noted that age-related factors associated with readmission include poor functional capacity, multiple comorbidities, COPD, and discharge to a non-home destination (Li, 2013).

Systematic reviews focused on the effectiveness of readmission avoidance interventions tend to show mixed results (Lambrinou, 2011; Linertová, 2011; Lupari, 2011; Schnitker, 2011; Walsh, 2014; Yam, 2010). Wakefield and colleagues conducted a systematic review of interventions used in outpatient CHF management programs and noted that the number of interventions in a single study ranged from one to seven. The most common interventions include patient education, symptom monitoring by staff, symptom monitoring by patient, medication adherence, and guideline adherence. Readmissions were significantly lower in treatment subjects than they were in control subjects. Programs more often relied on *clinician* monitoring of symptoms than *patients or lay caregiver* monitoring of symptoms (Wakefield, 2013).

Fredericks and colleagues (2010) noted statistically significant relationships between the number of self-care behaviors performed and the rate of hospital readmission. A review of 47 studies focused on heart failure (HF) (Feltner, 2014) noted that a high-intensity home-visiting program reduced all-cause readmission, but this finding must be interpreted within the fact that many studies did not report readmissions rates, as a limitation of this study.

A review of 32 randomized or controlled clinical trials found that most interventions did not have any effect on the readmission of elderly patients; however, interventions that included home care were more likely to reduce readmissions in the elderly compared to those that did not (Linertová, 2011). Batty and colleagues found that the most effective models to reduce readmissions among elders involve integrated teams in the patient's home. These teams addressed comprehensive geriatric assessment, care planning, disease management, and health promotion. The authors warned programs to consider cost effectiveness in the development of

effective interventions for delivery to a growing population of older people (Batty, 2010). A review of 24 randomized controlled trials found that readmissions were statistically reduced for patients admitted with a medical diagnosis and allocated to discharge planning, but noted that the impact on mortality, health outcomes, and cost remains uncertain (Shepperd, 2013).

An April 24, 2012, press release from NQF states, “Multiple factors affect readmission rates and other measures including: the complexity of the medical condition and associated therapies; effectiveness of inpatient treatment and care transitions; patient understanding of and adherence to treatment plans; patient health literacy and language barriers; and the availability and quality of post-acute and community-based services, particularly for patients with low income. Readmission measurement should reinforce national efforts to focus all stakeholders’ attention and collaboration on this important issue.” A study evaluating the experiences of three statewide programs to reduce preventable readmissions from 2009 to 2011 found that key obstacles to progress include the difficulty of establishing collaborative relationships across care settings, evidence gaps for effective interventions, and a lack of quality improvement capabilities among some organizations (Mittler, 2013). A meta-analysis of readmissions noted that less than one in four all-cause readmissions were deemed avoidable (van Walraven, 2012). Mixed results and observations suggest that reductions in readmissions may result in an increased number of hospital observation stays. This led to recommendations for alternative strategies for measurement of readmissions, such as broadening the focus from readmission measures to unplanned care composite measures (Baier, 2013).

Discussion

Reduction of 30-day hospital readmissions remains a broad challenge in the United States. This is a topic in need of additional research to identify optimal readmissions avoidance interventions. The mixed findings from multiple systematic literature reviews suggests that multiple factors affect the likelihood of readmission. Provision of care by a multidisciplinary care team in the home is a frequent intervention in successful readmission avoidance programs.

Differences in terminology, definitions, and methodology across studies present barriers to translation of current research into actionable program recommendations. Current readmissions measures may not capture quality of care provided to elderly seniors in the PACE program adequately. Alternate measurement concepts include unplanned care composite measures (including readmission, observation stays, and emergency department visits) (Baier, 2013) and “days in community” (Schwarzkopf, 2013). Considering how to avoid unplanned care may improve the delivery of appropriate post-hospital services. These considerations may increase the focus on transition management to decrease overall unplanned care, not just readmissions (Baier, 2013). This approach aligns well with the PACE program’s focus on coordination and community support.

Readmissions and Related Quality Measures

In a review of measures, the Econometrica Team identified multiple measures related to hospital readmission. We provide definitions below under headings that note associated endorsement.

- **Plan All-Cause Readmissions (PCR)** – (Process) For patients 18 years of age and older, the number of acute inpatient stays during the measurement year that were followed by

an acute readmission for any diagnosis within 30 days and the predicted probability of an acute readmission.

- **Hospital 30-Day All-Cause Risk-Standardized Readmission Rate (RSRR) Following Acute Myocardial Infarction (AMI) Hospitalization** – (Outcome) This measure estimates a hospital-level 30-day RSRR for patients discharged from the hospital with a principal diagnosis of AMI. The outcome is defined as readmission for any care within 30 days of the discharge date for the index admission.
- **Hospital 30-Day RSRR Following Percutaneous Coronary Intervention (PCI)** – (Outcome) This measure estimates hospital 30-day RSRR following hospital stays with a PCI.
- **Hospital 30-Day All-Cause RSRR Following COPD Hospitalization** – (Outcome) This measure estimates a hospital-level RSRR for patients discharged from the hospital with either a principal diagnosis of COPD or a principal diagnosis of respiratory failure with a secondary diagnosis of acute exacerbation of COPD. The outcome is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission.
- **Hospital 30-Day All-Cause RSRR Following HF Hospitalization** – (Outcome) This measure estimates a hospital-level 30-day RSRR for patients discharged from the hospital with a principal diagnosis of HF. The outcome is defined as readmission for any cause within 30 days of the discharge date for the index hospitalization, excluding a specified set of planned readmissions. The target population is patients aged 18 years and older.
- **Hospital 30-Day All-Cause RSRR Following Pneumonia Hospitalization** – (Outcome) This measure estimates a hospital-level RSRR for patients discharged from the hospital with a principal diagnosis of pneumonia. The outcome is defined as unplanned readmission for any cause within 30 days of the discharge date for the index admission.
- **Hospital-level 30-Day All-Cause RSRR Following Elective Primary Total Hip Arthroplasty (THA) and/or Total Knee Arthroplasty (TKA)** – (Outcome) This measure estimates hospital-level 30-day RSRR following elective primary THA and/or TKA in patients 65 years and older. The outcome is defined as readmission for any cause within 30 days of the discharge date for the index hospitalization, excluding a specified set of planned readmissions.
- **Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)** – (Outcome) This measure estimates the hospital-level, risk-standardized rate of unplanned, all-cause readmission after admission for any eligible condition within 30 days of hospital discharge (RSRR) for patients aged 18 and older.

NQF Endorsement Removed¹

- **Risk-Adjusted 30-Day All-Cause Readmission Rate** – (Outcome) Determines the risk-adjusted readmission rate for a selected adult target population and can be applied for any desired timeframe. Proposal to change the measure and offer a risk-factor approach.

¹ National Quality Forum: Quality Positioning System. <http://www.qualityforum.org/QPS/QPSTool.aspx>.

AHRQ National Quality Measures (Not Endorsed by NQF)

- **Mental illness: risk-adjusted rate of readmission following discharge for a mental illness** – (Process) This measure is used to assess the risk-adjusted rate of readmission following discharge for a mental illness for individuals 15 years and older. A case is counted as a readmission if it is for a selected mental illness diagnosis and if it occurs within 30 days of the index episode of inpatient care.
- **AMI: risk-adjusted rate of urgent readmission within 30 days following discharge for AMI** – (Process) This measure is used to assess the risk-adjusted rate of urgent readmission within 30 days following discharge for AMI for individuals age 20 years and older.

Summary of Technical Expert Panel Meeting

Name	Affiliation	City, State
Meenu Arora, B.H.M.S., M.B.A. (TEP Chair)	Quality Improvement Leader, Sequoia Hospital	Campbell, CA
Mary M. Austin, M.S.N., R.N., NHA	Vice President, Health Services, New Courtland Elder Services	Philadelphia, PA
Hazel R. Crews, PT, M.H.S., M.H.A., CPHQ	Chief Quality Coordinator, Indiana University Health	Indianapolis, IN
Jennifer Dingman	Caregiver for Participant of InnovAge PACE Program	Pueblo, CO
Theresa Edelstein, M.P.H., LNHA	Vice President, Post-Acute Care Policy and Special Initiatives, New Jersey Hospital Association	Princeton, NJ
Lisa Eible, M.S.W., LCSW	Social Work Supervisor, University Of Pennsylvania	Philadelphia, PA
Faisal H. Abdoul Enein, Dr.P.H., M.S.N., M.P.H., R.N., FNP-BC, USPHS	Adjunct Associate Professor, University of Texas Health Science Center	Houston, TX
Christine Fillipone, D.N.P., M.S.N., ANP, CIC	Director, Epidemiology/Infection Control, Community Medical Center	Toms River, NJ
Li Grace, M.H.A.	Chief Operating Officer, On Lok Lifeways	San Francisco, CA
Jill Graziano, R.N., B.S.N., M.B.A.	Executive Director, ElderONE	Rochester, NY
Jennie Chin Hansen, R.N., M.S., FAAN	Chief Executive Officer, American Geriatrics Society	New York, NY
Anne Lewis, B.S., M.A.	Director, PACE Advisory Services, Health Dimensions Group	Minneapolis, MN
Jay Stanley Luxenberg, M.D., FACP, AGSF	Chief Medical Officer, On Lok Lifeways	San Francisco, CA
Karen A. Madden, M.P.H., R.N.-BC, GNLA	Nursing Program Manager, Providence ElderPlace	Portland, OR
Michael Maller, B.S.	PACE Caregiver and ICU Liaison, University of Washington Medical Center	Seattle, WA
Daniel P. Ochylski, M.S., R.N.	Nurse Entrepreneur-Chief Executive Officer, Independent Nursing Services	Roseville, MI
Sarah Payne, D.O.	Geriatrics/Family Medicine/Hospice Physician, Banner Arizona Medical Clinic	Peoria, AZ
Lisa Zavorski, M.H.A.	Director of Quality and Compliance, Life St. Francis	Trenton, NJ
Jade Gong, M.B.A., R.N.	Senior Vice President, Strategic Initiatives, Health Dimensions Group	Minneapolis, MN
Stephanie Smith, CPA, MAcc	Chief Executive Officer, PACE Senior Services	New Orleans, LA
Johnnetta Davis-Joyce, M.A.	Health Group Director, Econometrica	Bethesda, MD
Darryl Roberts, Ph.D., M.S., R.N.	Project Director and TEP Facilitator, Econometrica	Bethesda, MD
Greg Daphnis, M.P.H.	Project Manager, Econometrica	Bethesda, MD
Michael Kaiser, Ph.D., M.S.	Senior Analyst, Econometrica	Bethesda, MD
Connie Burke, R.N., B.S.N.	Senior Analyst, Econometrica	Bethesda, MD
Nancy Dunton, Ph.D., FAAN	Director of the University of Kansas Medical Center Research Institute	Kansas City, KS
Rosemary Kennedy, Ph.D., R.N., M.B.A., FAAN	CEO of eCare Informatics	Frazer, PA
Glenna Davis	Administrative Assistant, Econometrica	Bethesda, MD

Environmental Scan

Summary of Discussion: Falls, Falls With Injury

- In the discussion on falls, Dr. Rosemary Kennedy cited the importance of considering the PACE participants' functional status. The TEP reached consensus that functional status should be considered when adapting the falls measure. Ms. Arora agreed that functional status should be considered and suggested that the TEP also examine intrinsic and extrinsic falls. Dr. Dunton emphasized the importance of considering the multiple causes of falls and how these can vary across care settings.
- Dr. Dunton indicated that the Econometrica Team is working from the NDNQI falls metric, since it is already NQF endorsed; he noted that adaptation will be needed, as the denominator is based on patient days in a facility and this is not applicable to PACE. Ms. Dingman emphasized the necessity of focusing on prevention approaches individualized to the participant. She stressed that TEP members must consider how caregivers and participants are "invited to the table" to give input. She added that there is not a great deal of coordination within the community between PACE settings and acute-care sites. Dr. Luxenberg noted that the AHRQ falls measure stops short of addressing care recommendations for caregivers below the professional nurse level. He suggested that standardizing practices for these caregivers is essential. Mr. Maller agreed with this, saying that the Econometrica Team should provide training and measure the effectiveness of that training. Dr. Roberts reminded the TEP that, for 2015, the TEP must focus on the four identified measures; however, the suggestions on education could be considered at a future time.
- There was discussion but no agreement reached on the appropriate source of information for falls. Specifically, Dr. Roberts pointed out that, since the falls measure might depend on self-report, there is considerable potential for underreporting by participants who might see reporting of falls as intrusive. Ms. Graziano added that participants might have a reasonable fear that reporting falls could lead caregivers to determine that participants need a safer alternative setting outside the home. Ms. Dingman supported this by saying that her mother has this same concern that reporting falls could lead to nursing home placement. The TEP also identified that, because of the nature and range of service providers, there are numerous individuals who could potentially report falls. The group discussed tasking data collection to licensed professionals only. The TEP did not reach consensus on this topic.
- Another topic discussed was the prevention of falls. Multifocal education (range of caregivers and care sites) was discussed as a potential preventive measure for falls. Dr. Roberts reminded the committee that developing education was outside the scope of work in 2015, but this may be considered in a future contract period.
- Ms. Eible discussed the applicability of participants receiving care under various waivers as a comparative group for PACE participants. Consideration of income and other demographics would be required. The TEP did note difficulty with this approach, as waiver participants do not receive the level of comprehensive care provided to PACE participants. Comparison would require some sort of control for this.

- Ms. Li noted that PACE programs are at varying levels of maturity. Therefore, measurement approaches must consider their differences moving forward. The Econometrica Team must take care to define the measures in a way that provides consistent methods of data capture, regardless of site maturity.

Summary of Discussion: Pressure Ulcers

- The discussion of pressure ulcers raised the question of transfer of information across caregivers and care sites. Specifically, Dr. Roberts asked whether PACE centers are using electronic means to track participants. Several PACE center representatives, including Ms. Eible, responded that, in large part, PACE programs are not using electronic health records (EHRs); others agreed. Some centers that have EHRs extract data or reenter data from charts into Excel in order to manipulate the data for analysis and reporting.
- Dr. Roberts introduced the question of incorporating a process measure around transitions. Dr. Payne led a discussion that resulted in TEP members' agreement that transitions and hand-offs were crucial elements to ensure that PACE participants could successfully remain in the community. Generally, the group opposed introducing a process measure when the focus of work is on outcomes.
- Another discussion ensued regarding PACE participants at the end of life. Dr. Roberts noted that, in his hospice clinical experience among patients at the end of life, skin ulcers occur that are due to decreased circulation and not pressure. How would this differentiation be made, or would caregivers recognize the difference? The TEP could not achieve a consensus on this but agreed that hospice patients outside of PACE would not provide a valid or reliable comparative group.
- Ms. Zavorski asked how the Econometrica Team proposed staging pressure ulcers, how to capture the data, and which stages the PACE metrics would collect. This raised the question of the caregiver documentation, as well as education/knowledge on accurate staging of pressure ulcers. The Econometrica Team agreed to consider these questions and limitations in the adaptation of PACE quality measures.

Summary of Discussion: 30-Day All-Cause Readmissions

- The discussion around readmissions was very active, with a majority of TEP members contributing insights. In general, all agreed that lack of thorough communication during care transitions is often the cause of readmissions. All stressed the importance of good communications and participant/family/caregiver engagement during hand-offs.
- In considering transitions, Dr. Roberts asked whether anyone was aware of a standard transition form or format in use in PACE programs. Ms. Edelstein responded that Maine was the only State she was aware of using such a form.
- Several members noted peculiarities in PACE services that might artificially inflate "readmissions." Ms. Zavorski pointed out that PACE might employ skilled nursing facilities (SNFs) and other non-hospital settings as a temporary alternative to acute care, when a participant's change in condition requires a higher level of care. Members expressed concern that SNF admission not be considered admissions in the same way as acute-care admissions. Additional discussion included the use of emergency room visits

and observation stays as alternatives to acute admissions. Mr. Ochylski noted that occasionally a PACE provider may direct a participant to an emergency room for further assessment—often by another PACE provider. If an observation stay occurs, PACE does not count these as acute-care admissions.

- Another area of extensive discussion was the need to involve the participant, family, and caregivers in care. All concurred that this was essential and that participant/caregiver input is essential in adapting the readmission metric.
- Ms. Hansen informed the TEP that behavioral health providers count “days in the community” instead of 30-day all-cause readmissions. A measure of this sort is under development for future NQF endorsement. In PACE, “days in the community” might measure changes in setting from home to SNF, acute care, emergency department, etc. The TEP requested more information on this measure. Ms. Hansen offered to send information to Dr. Roberts for review and distribution to the TEP.
- The TEP considered the meaning and impact of a hospital readmission. Dr. Luxenberg proposed that any readmission might be considered a “failure” in care, regardless of the index admission. He also warned the development team to be careful not to “chase zero” for this measure. Mr. Mallard and Ms. Dingman emphasized the great impact any readmission for any reason has for the participant, family, and caregivers. Dr. Roberts reminded the group that, for purposes of the 2015 work, we might only consider readmissions related to the index admission; however, he offered to take the idea to CDR Johnson for consideration in current or future work.

Conclusions With Recommendations

The Econometrica Team conducted an environmental scan of the most recent information available to inform the development of quality measures for the PACE program. To conduct this scan, we engaged in a pragmatic review of white and grey literature, engaged the input of experts in the field, and convened the first meeting of a TEP. The literature broadly supports the adaptation of measures that consider the PACE population as one that is similar to other elderly individuals in age only. This population differs in overall frailty, home-based care setting, provider and caregiver involvement, and broadness of non-home settings considered as part of the PACE programs. Quality measurement for this community must take into consideration these differences while simultaneously considering comparability of quality among settings.

The measures of quality for the base year of this project will include falls, falls with injury, pressure ulcers (prevention and outcomes), and readmissions.

Effective falls and falls with injury measures must consider the variety of places where a participant can receive care across the PACE continuum. To obtain the most reliable data, the measures must include participant preferences, particularly in the home, as he or she might not be willing to share information about falls, particularly those that do not result in injury, in that setting. Other settings might provide easier data access but underreport the numbers of falls as a consequence of the limited periods participants spend in each setting. For this reason, we recommend the deployment of a measure that includes a component of self-report with a

combination of claims and clinician survey data collection to ensure comprehensive data for analysis.

The measurement of pressure ulcers also presents an issue of underreported findings, but the problem might not be as significant as is found in the hospital environment where underreporting of the PSI-3 measure might top 90 percent. Since similar perverse incentives to underreport do not exist in the PACE environment, developing a measure that captures the incidence or prevalence of pressure ulcers might include claims data as a primary component. Because many measures only capture pressure ulcers rated at Stage II and above or Stage III and above, the biggest consideration is where to begin measurement. Our team's experience with the NDNQI suggests that capturing all stages of pressure ulcers would allow baseline granularity but permit reporting at any stage. We recommend testing data collection at Stage I and above but varying the collection to determine the most cost- and value-effective means of determining quality.

Measuring readmissions presents a multiplex of issues, including determining the value proposition for such quality measurement. The literature is replete with reports of hospital-based assessment of all-cause readmissions, but there are few reports of PACE-based measurement. PACE does have a rule requiring the reporting of 31-day all-cause readmission, but the TEP recommends considering non-hospital settings in a different way than hospital settings. Overall, the PACE program differs from any other program in both its community orientation and its inclusion of all settings of care as part of a denominator. One TEP member suggested the employment of a "days in the community" measure, similar to what might be used in the mental health community, in the near future. Our review of the literature provides some limited support for such a metric. All of these considerations are valid and informative. For this reason, we recommend that the government grant our proposal to modify the approved measurement plan to include a measure of "days in the community" to give due consideration to the providers' efforts to prevent hospital admission by employing alternative settings while also considering the participants' absences from their primary home-based setting.

Overall, and in particular consideration of the feedback obtained in the first TEP meeting, the Econometrica Team will place a high value on caregivers' and participants' inputs during the measure development process. Combined with advice obtained from administrators and providers, this information will play an important role in the quality measure development for PACE as the project continues. Finally, the team agrees to introduce only those process measures that are "tightly linked" to a given outcome.

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