NATIONAL QUALITY FORUM

Measure Evaluation 4.1
December 2009

This form contains the measure information submitted by stewards. Blank fields indicate no information was provided. Attachments also may have been submitted and are provided to reviewers. The subcriteria and most of the footnotes from the evaluation criteria are provided in Word comments within the form and will appear if your cursor is over the highlighted area. Hyperlinks to the evaluation criteria and ratings are provided in each section.

TAP/Workgroup (if utilized)**:** Complete all yellow highlighted areas of the form. Evaluate the extent to which each subcriterion is met. Based on your evaluation, summarize the strengths and weaknesses in each section.

Note: *If there is no TAP or workgroup, the SC also evaluates the subcriteria (yellow highlighted areas).*

Steering Committee: Complete all pink highlighted areas of the form. Review the workgroup/TAP assessment of the subcriteria, noting any areas of disagreement; then evaluate the extent to which each major criterion is met; and finally, indicate your recommendation for the endorsement. Provide the rationale for your ratings.

Evaluation ratings of the extent to which the criteria are met
C = Completely (unquestionably demonstrated to meet the criterion)
P = Partially (demonstrated to partially meet the criterion)
M = Minimally (addressed BUT demonstrated to only minimally meet the criterion)
N = Not at all (NOT addressed; OR incorrectly addressed; OR demonstrated to NOT meet the criterion)
NA = Not applicable (only an option for a few subcriteria as indicated)

(for NQF staff use) **NQF Review #:** NH-018-10 **NQF Project:** Nursing Homes 2010
MEASURE DESCRIPTIVE INFORMATION
De.1 **Measure Title:** Percent of Residents with a Urinary Tract Infection (Long-Stay)
De.2 **Brief description of measure***:* This measure updates CMS' current QM on Urinary Tract Infections in the nursing facility populations. It is based on MDS 3.0 data and measures the percentage of long-stay residents who have a urinary tract infection on the target MDS assessment (which may be an annual, quarterly, or significant change or correction assessment). In order to address seasonal variation, the proposed measure uses a 6-month average for the facility. Long-stay nursing facility residents are those whose stay in the facility is over 100 days. The measure is limited to the long-stay population because short-stay residents (those who are discharged within 100 days of admission) may have developed their urinary tract infections in the hospital rather than the nursing facility.
1.1-2 **Type of Measure:** Outcome De.3 **If included in a composite or paired with another measure, please identify composite or paired measure**
De.4 **National Priority Partners Priority Area:** Population health De.5 **IOM Quality Domain**: Safety De.6 **Consumer Care Need:**

CONDITIONS FOR CONSIDERATION BY NQF	
Four conditions must be met before proposed measures may be considered and evaluated for suitability as voluntary consensus standards:	**NQF Staff**
A. The measure is in the public domain or an intellectual property (measure steward agreement) is signed. *Public domain only applies to governmental organizations. All non-government organizations must sign a measure steward agreement even if measures are made publicly and freely available.* A.1 **Do you attest that the measure steward holds intellectual property rights to the measure and the right to use aspects of the measure owned by another entity (e.g., risk model, code set)?** Yes A.2 **Indicate if Proprietary Measure** (*as defined in measure steward agreement*)**:**	**A** **Y☐** **N☐**

A.3 Measure Steward Agreement: Government entity and in the public domain - no agreement necessary **A.4 Measure Steward Agreement attached:**	
B. The measure owner/steward verifies there is an identified responsible entity and process to maintain and update the measure on a schedule that is commensurate with the rate of clinical innovation, but at least every 3 years. Yes, information provided in contact section	**B** **Y**☐ **N**☐
C. The intended use of the measure includes both public reporting and quality improvement. ►**Purpose:** Public reporting, Internal quality improvement	**C** **Y**☐ **N**☐
D. The requested measure submission information is complete. Generally, measures should be fully developed and tested so that all the evaluation criteria have been addressed and information needed to evaluate the measure is provided. Measures that have not been tested are only potentially eligible for a time-limited endorsement and in that case, measure owners must verify that testing will be completed within 12 months of endorsement. **D.1Testing:** No, testing will be completed within 24 months **D.2 Have NQF-endorsed measures been reviewed to identify if there are similar or related measures?** Yes	**D** **Y**☐ **N**☐
(for NQF staff use) **Have all conditions for consideration been met?** **Staff Notes to Steward** (*if submission returned*)**:**	**Met** **Y**☐ **N**☐
Staff Notes to Reviewers (*issues or questions regarding any criteria*)**:** **Staff Reviewer Name(s):**	

TAP/Workgroup Reviewer Name:	
Steering Committee Reviewer Name:	
1. IMPORTANCE TO MEASURE AND REPORT	
Extent to which the specific measure focus is important to making significant gains in health care quality (safety, timeliness, effectiveness, efficiency, equity, patient-centeredness) and improving health outcomes for a specific high impact aspect of healthcare where there is variation in or overall poor performance. *Measures must be judged to be important to measure and report in order to be evaluated against the remaining criteria.* (evaluation criteria) **1a. High Impact**	Eval Rating
(for NQF staff use) Specific NPP goal:	
1a.1 Demonstrated High Impact Aspect of Healthcare: Patient/societal consequences of poor quality **1a.2** **1a.3 Summary of Evidence of High Impact:** Nursing facility residents often develop infections,(1, 2, 3, 4, 5) and among these, urinary tract infections are the most common.(6, 7, 8) Some residents who develop urinary tract infections develop blood infections, and 10 percent of these patients die within a week.(9) Symptoms of urinary tract infections include fever, painful or difficult urination, increased frequency and urgency of urination, blood in the urine, low abdominal or flank pain or tenderness, and deterioration in mental status (such as increased confusion). Using MDS 2.0 data for April–June 2009, the national prevalence of urinary tract infections in nursing facilities was 9.7%, with a range from a low average of 5.0% in Alaska to a high average of 14.3% in West Virginia.(10) The urinary tract infection quality measure is the only measure in the current measure set that addresses infections. Thus, the urinary tract infection quality measure is a very important indicator of how facilities prevent and manage infections. In a clinical review of the nursing home quality measures using the MDS 2.0, a Technical Expert Panel (TEP) organized by the University of Colorado concluded that the urinary tract infection quality measure is a "valuable source of information for nursing homes."(11) The measure prompts facilities to examine their approach to perineal care and their general infection rate. These infections have the potential for significant	**1a** **C**☐ **P**☐ **M**☐ **N**☐

Comment [KP1]: 1a. The measure focus addresses:
•a specific national health goal/priority identified by NQF's National Priorities Partners; OR
•a demonstrated high impact aspect of healthcare (e.g., affects large numbers, leading cause of morbidity/mortality, high resource use (current and/or future), severity of illness, and patient/societal consequences of poor quality).

morbidity and mortality.(12, 13) Infections increase the use of medical care and costs. Since many urinary tract infections are related to catheters, this quality measure provides an additional incentive for the facility to monitor its catheter use.(14)
Some urinary tract infections can be prevented by keeping the periurethral area clean, emptying the bladder regularly, drinking enough fluids, and practicing good hygiene.(15) Finding the cause and getting early treatment of a urinary tract infection can prevent the infection from spreading and becoming more serious or causing complications, such as delirium. In addition, some nursing facility residents are incorrectly diagnosed with urinary tract infections, thus leading to inappropriate use of antibiotics that can have adverse effects on older people as well as increase the presence of antibiotic resistant organisms.

1a.4 Citations for Evidence of High Impact: 1. Nicolle LE, McIntyre M, Zacharies H, et al. Twelve month surveillance of infections in institutionalized elderly men. J Am Geriatr Soc. 1984;32:513-9.

2. Magaziner J, Tenney J, Deforge B, et al. (1991). Prevalence and Characteristics of Nursing Home-Acquired Infections in the Aged. J Am Geriatr Soc. 39:1071-1078.

3. Finnegan T, Austin T, Cape R. 12-month fever surveillance study in a veterans' long-stay institution. J Am Geriatr Soc. 1985;33:590-4.

4. Jackson M, Fierer J, Barrett-Conner E, et al. Intensive surveillance for infections in a three year study of nursing home patients. Am J Epidemiol. 1992;135:685-96.

5. Strausbaugh LJ, Joseph CL. The burden of infection in long-term care. Infect Control Hosp Epidemiol. 2000;21(10):674-9.

6. Zimmer JG, Bentley DW, Valenti WM, et al. Systemic antibiotic use in nursing homes. a quality assessment. J Am Geriatr Soc. 1986;34:703-10.

7. Katz PR, Beam TR Jr., Brand F, et al. (1990). Antibiotic use in the nursing home. Physician practice patterns. Arch Int Med. 1990;150:1465-8

8. Lee Y, Thrupp LD, Friis HM, et al. Nosocomial infection and antibiotic utilization in geriatric patients: a pilot prospective surveillance program in skilled nursing facilities. Gerontology. 1992;38:223-32.

9. Saint S, Kauman SR, Robers MAM, et al. Risk factors for nosocomial urinary tract-related bacteremia: A case control study. Am J Infect Control. 2006;34(7):401-7.

10. Centers for Medicare & Medicaid Services. MDS quality measure/indicator report. 2009. Available from http://www.cms.hhs.gov/MDSPubQIandResRep/02_qmreport.asp#TopOfPage

11. Brega AG, Levy CR, Kramer AM, et al. Limited clinical review of publicly reported nursing home quality measures. Aurora, CO: University of Colorado, 2007.

12. Nicolle LE. Urinary tract infections in long-term care facilities. Infect Control Hosp Epidemiol. 1993;14:220-5.

13. Nicolle LE; SHEA Long-Term-Care Committee. Urinary tract infections in long-term care facilities. Infect Control Hosp Epidemiol. 2001;22:167-75.

14. Gould CV, Umscheid CA, Agarwal R, Kuntz G, Pegues DA; the Healthcare Infection Control Practices Advisory Committee. Guideline for prevention of catheter-associated urinary tract infections 2009. Atlanta: Centers for Disease Control and Prevention, 2009. Available from http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/CAUTI_Guideline2009final.pdf.

1b. Opportunity for Improvement

1b.1 Benefits (improvements in quality) envisioned by use of this measure: This measure is intended to reduce the incidence of urinary tract infections (UTIs) whenever possible.

1b C☐ P☐ **M**

Comment [KP2]: 1b. Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating considerable variation, or overall poor performance, in the quality of care across providers and/or population groups (disparities in care).

1b.2 Summary of data demonstrating performance gap (variation or overall poor performance) across providers:

The urinary tract infection measure is part of the current Centers for Medicare & Medicaid Services (CMS) publicly reported quality measures for nursing homes. In its analysis of the quality measure using MDS data from 2006, the University of Colorado found variability across facilities in the rates of urinary tract infection, suggesting that it is possible for facilities to improve.(1) The nursing facility mean was 9.0 percent and the standard deviation was 5.4%. The quality measure varied from 2.6% at the 10th percentile to 16.2% at the 90th percentile; only 3.5% of facilities had no residents with urinary tract infections.

See attached Table 1: Measure Variability Across Facilities.

1b.3 Citations for data on performance gap:

1. Brega A, Hittle D, Goodrich G, Kramer A, Conway K, Levy C. Empirical review of publicly reported nursing home quality measures. Denver: Division of Health Care Policy and Research University of Colorado at Denver; Abt Associates, Inc, 2007.

1b.4 Summary of Data on disparities by population group:

Although research suggests racial disparities in quality of care in nursing homes between African Americans and whites (1, 2, 3, 4, 5) and between Hispanics and whites,(6), no analyses have been conducted specifically examining racial disparities in urinary tract infections. No research has been conducted on other types of disparities (e.g., ethnicity, rural/urban, or income) specifically for this measure.

1b.5 Citations for data on Disparities:

1. Smith D, Feng Z, Fennell M, Zinn J, Mor V. Separate and unequal: racial segregation and disparities in quality across U.S. nursing homes. Health Aff (Millwood). 2007;26(5):1448-558.

2. Howard D, Sloane P, Zimmerman S, Eckert J, Walsh J, Buie V, Taylor P, Koch G. Distribution of African Americans in residential care/assisted living and nursing homes: more evidence of racial disparity? Am J Public Health. 2002;92(8):1272-7.

3. Grabowski D. The admission of blacks to high-deficiency nursing homes. Med Care. 2004;42(5):456-64.

4. Mor V, Zinn J, Angelelli J, Teno J, Miller S. Driven to tiers: socioeconomic and racial disparities in the quality of nursing home care. Milbank Q. 2004;82(2):227-56.

5. Miller SC, Papandonatos G, Fennell M, Mor V. Facility and county effects on racial differences in nursing home quality indicators. Soc Sci Med. 2006;63(12):3046-59.

6. Fennell ML, Feng Z, Clark MA, Mor V. Elderly Hispanics more likely to reside in poor quality nursing homes. Health Aff (Millwood). 2010;29(1):65-73.

1c. Outcome or Evidence to Support Measure Focus

1c.1 Relationship to Outcomes (*For non-outcome measures, briefly describe the relationship to desired outcome. For outcomes, describe why it is relevant to the target population*)**:** The desired outcome is for a low percentage of nursing facility residents to have urinary tract infections. Currently, nearly 1 in 10 nursing home residents have a urinary tract infection.(1) Urinary tract infections can be uncomfortable and painful and can lead to serious complications such as sepsis, hospitalization, emergency department use, delirium and death. Increasing antimicrobial resistance increases the importance of preventing the infection as well as treating it.(2) As a result, policymakers, providers, and consumers want nursing facility residents to have fewer illnesses and infections, including urinary tract infections.

1. Centers for Medicare & Medicaid Services. MDS quality measure/indicator report. 2009. Available from http://www.cms.hhs.gov/MDSPubQIandResRep/02_qmreport.asp#TopOfPage

2. Gupta K, Hooten T, Stamm W. Increasing antimicrobial resistance and management of uncomplicated community acquired urinary tract infections. Ann Intern Med. 2001;135:41-50.

	☐ N ☐
1c	C ☐ P ☐ M ☐ N ☐

Comment [k3]: 1 Examples of data on opportunity for improvement include, but are not limited to: prior studies, epidemiologic data, measure data from pilot testing or implementation. If data are not available, the measure focus is systematically assessed (e.g., expert panel rating) and judged to be a quality problem.

Comment [k4]: 1c. The measure focus is:
•an outcome (e.g., morbidity, mortality, function, health-related quality of life) that is relevant to, or associated with, a national health goal/priority, the condition, population, and/or care being addressed;
OR
•if an intermediate outcome, process, structure, etc., there is **evidence** that supports the specific measure focus as follows:
oIntermediate outcome – evidence that the measured intermediate outcome (e.g., blood pressure, Hba1c) leads to improved health/avoidance of harm or cost/benefit.
oProcess – evidence that the measured clinical or administrative process leads to improved health/avoidance of harm and
if the measure focus is on one step in a multi-step care process, it measures the step that has the greatest effect on improving the specified desired outcome(s).
oStructure – evidence that the measured structure supports the consistent delivery of effective processes or access that lead to improved health/avoidance of harm or cost/benefit.
oPatient experience – evidence that an association exists between the measure of patient experience of health care and the outcomes, values and preferences of individuals/ the public.
oAccess – evidence that an association exists between access to a health service and the outcomes of, or experience with, care.
oEfficiency – demonstration of an association between the measured resource use and level of performance with respect to one or more of the other five IOM aims of quality.

Comment [k5]: 4 Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multi-step process, the step with the greatest effect on the desired outcome should be selected as the focus of measurement. For example, although assessment of immunization status and recommending immunization are necessary steps, they are not sufficient to achieve the desired impact on health status – patients must be vaccinated to achieve immunity. This does not preclude consideration of measures of preventive screening interventions where there is a strong link with desired outcomes (e.g., mammography) or measures for multiple care processes that affect a single outcome.

1c.2-3. **Type of Evidence:** Evidence-based guideline, Randomized controlled trial, Observational study, Systematic synthesis of research, Expert opinion

1c.4 **Summary of Evidence** (*as described in the criteria; for outcomes, summarize any evidence that healthcare services/care processes influence the outcome*)**:**
Urinary tract infections may lead to serious complications such as sepsis, hospitalization, emergency department use, delirium and death. Urinary tract infections are commonly treated with antibiotics and other medications to relieve the burning pain and urgent need to urinate and to prevent serious complications.(1, 2, 3, 4, 5, 6, 7,8) Treatment is usually successful. One study estimated that antibiotic therapy shortens the duration of symptoms and will probably cure more than 90% of infections.(5) Increasing antimicrobial resistance increases the importance of preventing the infection.(4, 5, 9)

An estimated 17% to 69% of all catheter-associated urinary tract infections may be preventable.(10) Use of catheters is associated with urinary tract infections.(11) Some urinary tract infections can be prevented by keeping the periurethral area clean, emptying the bladder regularly, drinking enough fluids, and practicing good hygiene.(11, 12) Finding the cause and getting early treatment of a urinary tract infection can prevent the infection from spreading and becoming more serious or causing complications, such as delirium. In addition, some nursing home residents are incorrectly diagnosed with urinary tract infections, thus leading to inappropriate use of antibiotics that can have adverse effects on older people and increase the presence of antibiotic resistant organisms.

1. Warren, J., Abrutyn, J., Hebel, R., et al. (1999). Guidelines for antimicrobial treatment of uncomplicated acute bacterial cystitis and acute pyelonephritis in women. Clin Infect Dis. 29: 745-58.

2. Miller LG, et al. Treatment of uncomplicated urinary tract infections in an era of increasing antimicrobial resistance. Mayo Clin Proc. 2004;79(8):1048-54.

3. Gradwohl SE, Chenoweth CE, Fonde KR, Harrison RV, Zoschnick LB. (2005). University of Michigan Health System: urinary tract infection. 2005. Available from http://cme.med.umich.edu/pdf/guideline/uti.pdf.

4. Mehnert-Kay SA. Diagnosis and management of uncomplicated urinary tract infections. Am Fam Physician. 2005;72(3):451-6.

5. Nicolle L, Anderson PAM, Conly J, Mainprize TC, Meuser J, Nickel JC, Senikas VM, Zhanel GG. Uncomplicated urinary tract infections in women: current practice and the effect of antibiotic resistance on empiric treatment. Can Fam Physician. 2006;52:612-8.

6. Foster RT Sr. Uncomplicated urinary tract infections in women. Obstet Gynecol Clin North Am. 2008;35(2):235-48.

7. Nicolle LE. Urinary tract infections in the elderly. Clin Geriatr Med. 2009;25(3): 423-36.

8. Saint S, Kauman SR, Robers MAM, et al. Risk factors for nosocomial urinary tract-related bacteremia: A case control study. Am J Infect Control. 2006;34(7):401-7.

9. Gupta K, Hooten T, Stamm W. Increasing antimicrobial resistance and management of uncomplicated community acquired urinary tract infections. Ann Intern Med. 2001;135:41-50.

10. Umscheid C, Mitchell M, Agarwal R, Williams K, Brennan P. (2008). Mortality from reasonably-preventable hospital infections, included in written testimony by the Society of Healthcare Epidemiology of America for the Committee on Oversight and Government Reform hearing on healthcare-associated infections: A preventable epidemic. Washington, DC. 2008.

11. Gould CV, Umscheid CA, Agarwal R, Kuntz G, Pegues DA; the Healthcare Infection Control Practices Advisory Committee. Guideline for prevention of catheter-associated urinary tract infections 2009. Atlanta: Centers for Disease Control and Prevention, 2009. Available from

http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/CAUTI_Guideline2009final.pdf.

12. Beyer I, Mergam A, Benoit F, et al. Management of urinary tract infections in the elderly. Z Gerontol Geriatr. 2001;34: 153-7.

13: Kamel HK. Managing urinary tract infections in the nursing home: Myths, mysteries and realities. Int J Geriatr Gerontol. 2004;1(2). Available from http://www.ispub.com/journal/the_internet_journal_of_geriatrics_and_gerontology/volume_1_number_2_21/article/managing_urinary_tract_infections_in_the_nursing_home_myths_mysteries_and_realities.html

1c.5 Rating of strength/quality of evidence (*also provide narrative description of the rating and by whom***):** The body of evidence for this measure has not been rated.

1c.6 Method for rating evidence:

1c.7 Summary of Controversy/Contradictory Evidence: There is some debate over what constitutes a urinary tract infection. Traditionally, 105 cfu/mL in cultured urine was the threshold. More recently, the conventional view is that low colony counts may simply represent early urinary tract infection; moreover, it appears that symptoms associated with low colony counts respond to antibiotic treatment as well as symptoms with high counts.(3)

1c.8 Citations for Evidence (*other than guidelines***):**

1. Warren, J., Abrutyn, J., Hebel, R., et al. (1999). Guidelines for antimicrobial treatment of uncomplicated acute bacterial cystitis and acute pyelonephritis in women. Clin Infect Dis. 29: 745-58.

2. Miller LG, et al. Treatment of uncomplicated urinary tract infections in an era of increasing antimicrobial resistance. Mayo Clin Proc. 2004;79(8):1048-54.

3. Gradwohl SE, Chenoweth CE, Fonde KR, Harrison RV, Zoschnick LB. (2005). University of Michigan Health System: urinary tract infection. 2005. Available from http://cme.med.umich.edu/pdf/guideline/uti.pdf.

4. Mehnert-Kay SA. Diagnosis and management of uncomplicated urinary tract infections. Am Fam Physician. 2005;72(3):451-6.

5. Nicolle L, Anderson PAM, Conly J, Mainprize TC, Meuser J, Nickel JC, Senikas VM, Zhanel GG. Uncomplicated urinary tract infections in women: current practice and the effect of antibiotic resistance on empiric treatment. Can Fam Physician. 2006;52:612-8.

6. Foster RT Sr. Uncomplicated urinary tract infections in women. Obstet Gynecol Clin North Am. 2008;35(2):235-48.

7. Nicolle LE. Urinary tract infections in the elderly. Clin Geriatr Med. 2009;25(3): 423-36.

8. Gupta K, Hooten T, Stamm W. Increasing antimicrobial resistance and management of uncomplicated community acquired urinary tract infections. Ann Intern Med. 2001;135:41-50.

9. Umscheid C, Mitchell M, Agarwal R, Williams K, Brennan P. (2008). Mortality from reasonably-preventable hospital infections, included in written testimony by the Society of Healthcare Epidemiology of America for the Committee on Oversight and Government Reform hearing on healthcare-associated infections: A preventable epidemic. Washington, DC. 2008.

10. Gould CV, Umscheid CA, Agarwal R, Kuntz G, Pegues DA; the Healthcare Infection Control Practices Advisory Committee. Guideline for prevention of catheter-associated urinary tract infections 2009. Atlanta: Centers for Disease Control and Prevention, 2009. Available from http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/CAUTI_Guideline2009final.pdf.

11. Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. BMJ. 2004;336(7652):1049-51.

Comment [k6]: 3 The strength of the body of evidence for the specific measure focus should be systematically assessed and rated (e.g., USPSTF grading system http://www.ahrq.gov/clinic/uspstf07/methods/benefit.htm). If the USPSTF grading system was not used, the grading system is explained including how it relates to the USPSTF grades or why it does not. However, evidence is not limited to quantitative studies and the best type of evidence depends upon the question being studied (e.g., randomized controlled trials appropriate for studying drug efficacy are not well suited for complex system changes). When qualitative studies are used, appropriate qualitative research criteria are used to judge the strength of the evidence.

1c.9 Quote the Specific guideline recommendation (*including guideline number and/or page number*): The clinical guidelines are too extensive to quote here, but can be found in citations 1, 2, 3, 4, 5, 7, and 10. **1c.10 Clinical Practice Guideline Citation:** The clinical guidelines are too extensive to quote here, but can be found in citations 1, 2, 3, 4, 5, 7, and 10. **1c.11 National Guideline Clearinghouse or other URL:** The URLs for the guidelines may be found in citations 1, 2, 3, 4, 5, 7, and 10. **1c.12 Rating of strength of recommendation (*also provide narrative description of the rating and by whom*):** One review rated the quality of evidence as "Level 1," reporting that most evidence is from clinical trials of treatment.(1) Another review, however, rated the quality of evidence for specific drug treatments as opposed to the appropriateness of some drug treatment as "C" (consensus, disease-oriented evidence, usual practice, expert opinion, or case studies), although the rating specifically for treatment of older women as to whether the antibiotic treatment should be shorter or longer was rated "B" (inconsistent or limited-quality patient-oriented evidence).(2) 1. Warren, J., Abrutyn, J., Hebel, R., et al. (1999). Guidelines for antimicrobial treatment of uncomplicated acute bacterial cystitis and acute pyelonephritis in women. Clin Infect Dis. 29: 745-58. 2. Mehnert-Kay SA. Diagnosis and management of uncomplicated urinary tract infections. Am Fam Physician. 2005;72(3):451-6. **1c.13 Method for rating strength of recommendation** (*If different from* USPSTF system*, also describe rating and how it relates to USPSTF)*: The method of rating the evidence was The Strength of Recommendation Taxonomy (SORT) system of the American Academy of Family Physicians, and a Canadian rating system (5). 1. Warren, J., Abrutyn, J., Hebel, R., et al. (1999). Guidelines for antimicrobial treatment of uncomplicated acute bacterial cystitis and acute pyelonephritis in women. Clin Infect Dis. 29: 745-58. 2. Mehnert-Kay SA. Diagnosis and management of uncomplicated urinary tract infections. Am Fam Physician. 2005;72(3):451-6. **1c.14 Rationale for using this guideline over others:** No particular guideline is recommended in this quality measure. The quality measure focuses on the outcome not on the process by which the facility reaches the outcome.	
TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Importance to Measure and Report?*	**1**
Steering Committee: Was the threshold criterion, *Importance to Measure and Report*, **met?** **Rationale:**	**1** **Y☐** **N☐**
2. SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES	
Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. (evaluation criteria)	Eval Rating
2a. MEASURE SPECIFICATIONS	
S.1 Do you have a web page where current detailed measure specifications can be obtained? **S.2 If yes, provide web page URL:** **2a. Precisely Specified**	**2a-specs** **C☐** **P☐**
2a.1 Numerator Statement (*Brief, text description of the numerator - what is being measured about the*	

Comment [k7]: USPSTF grading system **http://www.ahrq.gov/clinic/uspstf/grades.htm**: **A -** The USPSTF recommends the service. There is high certainty that the net benefit is substantial. **B -** The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial. **C -** The USPSTF recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is at least moderate certainty that the net benefit is small. Offer or provide this service only if other considerations support the offering or providing the service in an individual patient. **D -** The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits. **I -** The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

Comment [KP8]: 2a. The measure is well defined and precisely specified so that it can be implemented consistently within and across organizations and allow for comparability. The required data elements are of high quality as defined by NQF's Health Information Technology Expert Panel (HITEP) .

target population, e.g. target condition, event, or outcome)**:** The numerator is the number of long-stay nursing facility residents who have an annual, quarterly, or significant change or correction assessment during the selected time window with reported urinary tract infections in the last 30 days (Item I2300 of the MDS 3.0 is checked). 2a.2 **Numerator Time Window (***The time period in which cases are eligible for inclusion in the numerator*)**:** The numerator is the number of MDS annual, quaterly, significant change or correction assessments that report urinary tract infections over the last two quarters divided by 2. The proposed measure is computed over two quarters to reduce the effect of seasonal variation. 2a.3 **Numerator Details (***All information required to collect/calculate the numerator, including all codes, logic, and definitions*)**:** Residents are counted if they are long-stay residents, defined as residents whose length of stay is greater than 100 days. Residents who return to the nursing home following a hospital discharge will not have their day count reset to zero. Residents are counted if item I2300 of the MDS 3.0, urinary tract infection within the last 30 days, is checked. This section of the MDS 3.0, "Active Diagnoses," asks that all applicable diagnoses be checked. The proposed measure uses all non-admission MDS OBRA assessments (A0310.A=02,03,04,05,06) over the last 6-month period to adjust for seasonal variation. The numerator is the number of non-admission MDS OBRA assessments (which may be an annual, quarterly, significant change or significant correction assessment) that report urinary tract infections over the last two quarters divided by 2. The measure is computed over two quarters to reduce the effect of seasonal variation.	**M** ☐ **N** ☐
2a.4 **Denominator Statement (***Brief, text description of the denominator - target population being measured*)**:** All MDS target assessments (which may be an annual, quarterly, significant change or significant correction assessment) over the last two quarters. The total number of assessments is then divided by two to report an average quarter count. 2a.5 **Target population gender:** Female, Male 2a.6 **Target population age range:** The target population includes people of all ages who are long-stay residents in the nursing facility. 2a.7 **Denominator Time Window (***The time period in which cases are eligible for inclusion in the denominator*)**:** All assessments of long-stay nursing home residents over the last two-quarter period, with the exception of admission assessments, divided by 2. The measure is computed over two quarters to reduce the effect of seasonal variation. 2a.8 **Denominator Details (***All information required to collect/calculate the denominator - the target population being measured - including all codes, logic, and definitions*)**:** Residents are counted if they are long-stay residents defined as residents whose length of stay is greater than 100 days. Residents who return to the nursing home following a hospital discharge will not have their day count reset to zero. The denominator includes non-admission OBRA assessments (A0310.A=02,03,04,05,06) except those with exclusions over the last two-quarter period divided by 2. Residents with only OBRA admission assessments are excluded because they may have developed their urinary tract infections in the hospital rather than the nursing home. An OBRA admission assessment is identified if item A0310.A=01 (admission assessment).	
2a.9 **Denominator Exclusions (***Brief text description of exclusions from the target population*)**:** There is one exclusion for the denominator. A resident is excluded from the denominator if the selected MDS OBRA assessment was conducted within 14 days of admission (an "admission assessment"). An OBRA admission assessment is identified if item A0310A = 01 (admission assessment) is checked. Assessments of residents with only an admission assessment are excluded because these residents may have developed their urinary tract infections in the hospital rather than the nursing home. It would be unfair to hold the nursing facility accountable for care received in the hospital. 2a.10 **Denominator Exclusion Details (***All information required to collect exclusions to the denominator, including all codes, logic, and definitions*)**:** OBRA admission assessments are excluded. An assessment is determined to be an admission assessment if	

Comment [k9]: 11 Risk factors that influence outcomes should not be specified as exclusions.
12 Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.

A0310A = 01 on the MDS. An OBRA admission assessment is required to be conducted within 14 days of admission.

2a.11 Stratification Details/Variables (*All information required to stratify the measure including the stratification variables, all codes, logic, and definitions***):**

2a.12-13 Risk Adjustment Type: No risk adjustment necessary

2a.14 Risk Adjustment Methodology/Variables (*List risk adjustment variables and describe conceptual models, statistical models, or other aspects of model or method***):**

2a.15-17 Detailed risk model available Web page URL or attachment:

2a.18-19 Type of Score: Ratio
2a.20 Interpretation of Score:
2a.21 Calculation Algorithm (*Describe the calculation of the measure as a flowchart or series of steps***):**
Step 1: Determine the number of non-admission OBRA MDS 3.0 assessments (A0310A=02, 03, 04, 05, 06) for long-stay residents who have had a urinary tract infection in the last 30 days (item I2300 is checked on the MDS 3.0) during the last two quarters. Step 2: Determine the total number of non-admission, OBRA MDS 3.0 assessments (exclude those with A0310A = 01 (admission assessment) during the last two quarters). Step 3: Divide the result of Step 1 by the result of Step 2 and then divide the result by 2.

2a.22 Describe the method for discriminating performance *(e.g., significance testing)***:**
Because the computed scores are not estimates, but include all residents who meet the measure criteria, in terms of discriminating performance, the computed scores can be used to make valid comparisons.

2a.23 Sampling (Survey) Methodology *If measure is based on a sample (or survey), provide instructions for obtaining the sample, conducting the survey and guidance on minimum sample size (response rate)*:
This is not applicable.

2a.24 Data Source (*Check the source(s) for which the measure is specified and tested)*
Electronic clinical data

2a.25 Data source/data collection instrument (*Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.***):**
The proposed data source is the Nursing Home Minimum Data Set (MDS) 3.0.

2a.26-28 Data source/data collection instrument reference web page URL or attachment: URL
http://www.cms.hhs.gov/NursingHomeQualityInits/25_NHQIMDS30.asp#TopOfPage

2a.29-31 Data dictionary/code table web page URL or attachment: URL
http://www.cms.hhs.gov/NursingHomeQualityInits/25_NHQIMDS30.asp#TopOfPage

2a.32-35 Level of Measurement/Analysis (*Check the level(s) for which the measure is specified and tested)*
Population: national, Facility/Agency

2a.36-37 Care Settings (*Check the setting(s) for which the measure is specified and tested)*
Nursing home (NH) /Skilled Nursing Facility (SNF)

2a.38-41 Clinical Services (*Healthcare services being measured, check all that apply*)

TESTING/ANALYSIS

2b. Reliability testing **2b** C☐ P☐ M☐

2b.1 Data/sample *(description of data/sample and size)***:** Three major tests of the reliability of the urinary tract infection measure have been conducted. First, the MDS 2.0 measure items and the existing quality measure were tested in the Data Assessment and Verification (DAVE 2) project conducted by Abt

Comment [KP10]: 2b. Reliability testing demonstrates the measure results are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period.

Associates.(1) This project used a nationwide sample of randomly selected nursing homes using MDS assessments for the period April 1 to December 31, 2006.(1) DAVE 2 performed 173 two-stage reviews. Second, the University of Colorado used national facility-level quality measure data from 2003 Quarter 3 (Q3) through 2006 Q3 came from the Quality Improvement and Evaluation System (QIES) MDS Express Reports on the CMS intranet; Online Survey, Certification, and Reporting (OSCAR) data related to facility characteristics (e.g., state, resident census, number of beds, staffing) and certification survey results were downloaded from QIES Workbench.(2) A 10% random sample of all Medicare-certified nursing facilities was also downloaded from MDS assessment records. Analyses were based on complete MDS data from January 2005 through March 2006, as well as nearly complete data for April 2006 and partial data for May and June 2006. Third, testing of the reliability of MDS 3.0 data items underlying the urinary tract infection quality measure as well as a comparison with the MDS 2.0 quality measures was conducted by RAND as part of the MDS 3.0 development process.(3) A representative sample of for-profit and not-for-profit facilities and hospital-based and free-standing facilities was recruited for the study, which included 71 community nursing homes in 8 states, 19 VA nursing homes, and 1,402 nursing home residents for the urinary tract infection quality measure. 1. Abt Associates, Inc.; Stepwise Systems, Inc.; Qualidigm. Data Assessment and Verification (DAVE 2) project—MDS two-stage discrepancy findings, April–December 2006. Cambridge, MA: Abt Associates, Inc, 2007. 2. Brega A, Hittle D, Goodrich G, Kramer A, Conway K, Levy C. Empirical review of publicly reported nursing home quality measures. Denver: Division of Health Care Policy and Research University of Colorado at Denver; Abt Associates, Inc, 2007. 3. Saliba D, Buchanan J. Development and Validation of a Revised Nursing Home Assessment Tool: MDS 3.0. Contract No. 500-00-0027/Task Order #2. Santa Monica, CA: Rand Corporation, Apr 2008. Available from http://www.cms.hhs.gov/NursingHomeQualityInits/Downloads/MDS30FinalReport.pdf. **2b.2 Analytic Method** *(type of reliability & rationale, method for testing)*: Three sets of analytic methods were used. First, in the DAVE 2 Project, trained nurse reviewer selected a current resident with a recent assessment performed by the nursing home (NH) within the last 14 days.(1) In the first stage of this review, the nurse reviewer conducted a blind reassessment of the resident using standard MDS assessment and coding procedures (e.g., examination of the medical record; observation of the resident; interview of staff, resident, and family, and use of coding criteria). In the second stage of this assessment, the DAVE 2 nurse reviewer's assessment was compared to the corresponding nursing home assessment and each discrepancy was reconciled, with the nursing home assessor and the nurse reviewer agreeing on the appropriate response. In addition to data entering the facility MDS code, the DAVE 2 code, and the reconciled code into the MDS-QC data entry software, the DAVE 2 nurse reviewer entered a "reason code" to attribute the cause of the discrepancy, per MDS item reviewed, to an established list of reasons. Second, in terms of measure stability, which is not exactly the same reliability but it a concept related to it, the University of Colorado examined the percentage of facilities that had a change in ranking from one quarter to the next of at least three deciles.(2) This indicator of stability was computed for each of the twelve pairs of adjacent quarters for which data were available (2003 Q3 through 2006 Q3). Third, the national test of MDS 3.0 items examined agreement between assessors (reliability).(2) Quality Improvement Organizations (QIOs) were employed to identify gold-standard (research) nurses and recruit community nursing homes to participate in the national evaluation. The gold-standard nurses were trained in the MDS 3.0 instrument and, in turn, trained a facility nurse from each participating nursing home in their home states. Residents participating in the test were selected to capture a representative sample of short- and long-stay residents. Quality measures using the MDS 2.0l and the MDS 3.0 were calculated and then compared, with correlations and Kappas calculated. 1. Abt Associates, Inc.; Stepwise Systems, Inc.; Qualidigm. Data Assessment and Verification (DAVE 2) project—MDS two-stage discrepancy findings, April–December 2006. Cambridge, MA: Abt Associates, Inc, 2007. 2. Brega A, Hittle D, Goodrich G, Kramer A, Conway K, Levy C. Empirical review of publicly reported nursing home quality measures. Denver: Division of Health Care Policy and Research University of Colorado at Denver; Abt Associates, Inc, 2007. 3. Saliba D, Buchanan J. Development and Validation of a Revised Nursing Home Assessment Tool: MDS 3.0. Contract No. 500-00-0027/Task Order #2. Santa Monica, CA: Rand Corporation, Apr 2008. Available from	**N** ☐

Comment [k11]: 8 Examples of reliability testing include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; internal consistency for multi-item scales; test-retest for survey items. Reliability testing may address the data items or final measure score.

http://www.cms.hhs.gov/NursingHomeQualityInits/Downloads/MDS30FinalReport.pdf.

2b.3 Testing Results *(reliability statistics, assessment of adequacy in the context of norms for the test conducted)*:
As part of the DAVE 2 project, Abt Associates used two methods to assess the reliability of the MDS 2.0 quality measures.(1) First, for each MDS data element, the rate of discrepancies between the reconciled and original facility assessments has been reported. For urinary tract infection, the two-stage review discrepancy rate was 7.4%. Second, Abt reported the rate of discrepancies between each quality measure, computed from facility data, and its counterpart, computed from reconciled data. For urinary tract infection, the two-stage discrepancy rate was 10.1%.

Second, in terms of measure stability, the University of Colorado examined the percentage of facilities that had a change in ranking of at least three deciles from one quarter to the next.(2) For urinary tract infection, 30.4% of facilities had a three-decile-or-more change from one quarter to the next quarter. The range of stability measures across the 12 comparisons was very small (i.e., the difference between the maximum and minimum values), indicating that measure stability is quite constant over time. For urinary tract infections, the minimum percentage was 29.9%, and the maximum percentage was 31.0%.

Third, in their testing of the MDS 3.0, RAND compared the results on the nursing home quality measures using the MDS 3.0 and the MDS 2.0, both at the individual resident level and at the facility level.(3) At the resident level, the urinary tract infection rate using the MDS 2.0 was 10.0% and using the MDS 3.0 was 7.5%; the Kappa was 0.70 and the correlation was 0.71. Kappa is a statistical measure of inter-rater agreement for qualitative data, ranging from 0.0 to 1.0. A rating of 0.70 is considered "substantial agreement." At the facility level, the MDS 2.0 rate of urinary tract infections was 10.2% and the MDS 3.0 rate was 7.3%, with a correlation of 0.80, which is quite high.

1. Abt Associates, Inc.; Stepwise Systems, Inc.; Qualidigm. Data Assessment and Verification (DAVE 2) project—MDS two-stage discrepancy findings, April-December 2006. Cambridge, MA: Abt Associates, Inc, 2007.

2. Brega A, Hittle D, Goodrich G, Kramer A, Conway K, Levy C. Empirical review of publicly reported nursing home quality measures. Denver: Division of Health Care Policy and Research University of Colorado at Denver; Abt Associates, Inc, 2007.

3. Saliba D, Buchanan J. Development and Validation of a Revised Nursing Home Assessment Tool: MDS 3.0. Contract No. 500-00-0027/Task Order #2. Santa Monica, CA: Rand Corporation, Apr 2008. Available from http://www.cms.hhs.gov/NursingHomeQualityInits/Downloads/MDS30FinalReport.pdf

2c. Validity testing

2c.1 Data/sample *(description of data/sample and size)*: Two studies examined the validity of the urinary tract infection measure. First, the analyses conducted by the University of Colorado used national facility-level quality measure data from 2003 Q3 through 2006 Q3 came from the QIES MDS Express Reports on the CMS intranet; OSCAR data related to facility characteristics (e.g., state, resident census, number of beds, staffing) and certification survey results were downloaded from QIES Workbench.(1) A 10% random sample of all Medicare-certified nursing facilities was also downloaded from MDS assessment records. Analyses were based on complete MDS data from January 2005 through March 2006, as well as nearly complete data for April 2006 and partial data for May and June 2006.

Second, in a study of the validity of the urinary tract infection quality measure, Stevenson, Moore and Sleeper recruited 16 Idaho nursing homes to voluntary participate in a CMS-funded performance improvement project to reduce inappropriate antimicrobial prescribing for urinary tract infections from July 2001 to June 2002.(2)

1. Brega A, Hittle D, Goodrich G, Kramer A, Conway K, Levy C. Empirical review of publicly reported nursing home quality measures. Denver: Division of Health Care Policy and Research University of Colorado at Denver; Abt Associates, Inc, 2007.

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P☐
M☐
N☐

Comment [KP12]: 2c. Validity testing demonstrates that the measure reflects the quality of care provided, adequately distinguishing good and poor quality. If face validity is the only validity addressed, it is systematically assessed.

2. Stevenson KB, Moore JW, Sleeper B. Validity of the Minimum Data Set in identifying urinary tract infections in residents of long-term care facilities. J Am Geriatr Soc. 2007;52: 707-711.

2c.2 Analytic Method *(type of validity & rationale, method for testing)*:
Construct validity using correlations and sensitivity analysis to evaluate whether UTI QM ratings are associated with other indicators of nursing home quality.

2c.3 Testing Results *(statistical results, assessment of adequacy in the context of norms for the test conducted)*:
Two studies addressed the validity of the urinary tract infection measure. First, in an analysis by the University of Colorado, the urinary tract infection measure had correlations of 0.12 or less with other publicly reported nursing home quality measures.(1) The only correlation that was higher was 0.28 with indwelling catheter, which would be expected given that they both involve the urinary tract.

Second, in a study of 16 nursing homes in Idaho, researchers examined the validity of the MDS 2.0 urinary tract infection quality measure by comparing the MDS results to those of an active, prospective surveillance program in the facilities.(2) While almost all of the urinary tract infections were identified by the MDS, the measure also identified a substantial number of false positives. The estimated sensitivity (the proportion of residents listed with a urinary tract infection with an actual urinary tract infection disease) of the MDS was 57.9% and specificity (proportion of residents not listed as having a urinary tract infection that did not have a urinary tract infection) was 86.5%. Given the importance of infection control in nursing homes, it is preferable to cast a fairly wide net to identify all persons who need treatment and to motivate facilities to improve their practices.

1. Brega A, Hittle D, Goodrich G, Kramer A, Conway K, Levy C. Empirical review of publicly reported nursing home quality measures. Denver: Division of Health Care Policy and Research University of Colorado at Denver; Abt Associates, Inc, 2007.

2. Stevenson KB, Moore JW, Sleeper B. Validity of the Minimum Data Set in identifying urinary tract infections in residents of long-term care facilities. J Am Geriatr Soc. 2007;52: 707-711.

2d. Exclusions Justified

2d.1 Summary of Evidence supporting exclusion(s):
All assessments of long-stay residents for which complete data is available are included. Short-term, post-acute care residents are not included because they are likely to have developed their urinary tract infection in the hospital rather than the nursing facility. Excluding missing data for existing quality measures is standard practice and was initially endorsed by NQF. Missing data is excluded from the calculation of the quality measures for several reasons. 1) There are legitimate reasons for facility staff not to select a 'dash' rather than a response; for example, if a resident is discharged or transferred abruptly, the staff may not be able to complete all items, however, an assessment is required for payment. The intent of the 'dash' is to allow the facility to submit an assessment when the staff are unable to complete the entire assessment. 2) Historically there has been very little missing data. For example, the current quality measure "Percent of residents who were physically restrained", is based on three fields on the MDS 3.0. For all of the non-admission target assessments for calendar year 2009, there were 5,242,022 such assessments and 629 assessments (0.012%) had a dash for one or more of the three fields for the physical restraint measure. 3) We remain concerned about a change in measure definition that may result in incentivizing the facility staff to fill in a response to avoid a missing item. We believe that the result will lead to decreased validity and usefulness of the measure.

2d.2 Citations for Evidence:
This is not applicable.

2d.3 Data/sample *(description of data/sample and size)*: This is not applicable.

2d.4 Analytic Method *(type analysis & rationale)*:
This is not applicable.

2d
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P ☐
M ☐
N ☐
NA ☐

Comment [k13]: 9 Examples of validity testing include, but are not limited to: determining if measure scores adequately distinguish between providers known to have good or poor quality assessed by another valid method; correlation of measure scores with another valid indicator of quality for the specific topic; ability of measure scores to predict scores on some other related valid measure; content validity for multi-item scales/tests. Face validity is a subjective assessment by experts of whether the measure reflects the quality of care (e.g., whether the proportion of patients with BP < 140/90 is a marker of quality). If face validity is the only validity addressed, it is systematically assessed (e.g., ratings by relevant stakeholders) and the measure is judged to represent quality care for the specific topic and that the measure focus is the most important aspect of quality for the specific topic.

Comment [KP14]: 2d. Clinically necessary measure exclusions are identified and must be:
•supported by evidence of sufficient frequency of occurrence so that results are distorted without the exclusion;
AND
•a clinically appropriate exception (e.g., contraindication) to eligibility for the measure focus;
AND
•precisely defined and specified:
–if there is substantial variability in exclusions across providers, the measure is specified so that exclusions are computable and the effect on the measure is transparent (i.e., impact clearly delineated, such as number of cases excluded, exclusion rates by type of exclusion);
if patient preference (e.g., informed decision-making) is a basis for exclusion, there must be evidence that it strongly impacts performance on the measure and the measure must be specified so that the information about patient preference and the effect on the measure is transparent (e.g., numerator category computed separately, denominator exclusion category computed separately).

Comment [k15]: 10 Examples of evidence that an exclusion distorts measure results include, but are not limited to: frequency of occurrence, sensitivity analyses with and without the exclusion, and variability of exclusions across providers.

2d.5 Testing Results *(e.g., frequency, variability, sensitivity analyses)*:
This is not applicable.

2e. Risk Adjustment for Outcomes/ Resource Use Measures

2e.1 Data/sample *(description of data/sample and size)*: This is not applicable.

2e.2 Analytic Method *(type of risk adjustment, analysis, & rationale)*:
This is not applicable.

2e.3 Testing Results *(risk model performance metrics)*:
This is not applicable.

2e.4 If outcome or resource use measure is not risk adjusted, provide rationale: The measure is not risk adjusted through a statistical model. However, the measure only applies to long-stay residents. The measure is limited to the long stay population because post-acute care patients may have developed their urinary tract infection in the hospital rather than the nursing facility. Urinary tract infections are a relatively high prevalence problem and there are no obvious conditions for which risk adjustment is appropriate. In particular, urinary tract infections are often associated with catheter use, which is often inappropriate.(1) Thus, risk adjusting for the proportion of residents who have catheters would not be desirable.

1. Gould CV, Umscheid CA, Agarwal R, Kuntz G, Pegues DA; the Healthcare Infection Control Practices Advisory Committee. Guideline for prevention of catheter-associated urinary tract infections 2009. Atlanta: Centers for Disease Control and Prevention, 2009. Available from http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/CAUTI_Guideline2009final.pdf.

2e C☐ P☐ M☐ N☐ NA☐

2f. Identification of Meaningful Differences in Performance

2f.1 Data/sample from Testing or Current Use *(description of data/sample and size)*: The measure is not risk adjusted through a statistical model. However, the measure only applies to long-stay residents. The measure is limited to the long-stay population because post-acute care patients may have developed their urinary tract infection in the hospital rather than the nursing facility. Urinary tract infections are a relatively high prevalence problem and there are no obvious conditions for which risk adjustment is appropriate. In particular, urinary tract infections are often associated with catheter use, which is often inappropriate.(1) Thus, risk adjusting for the proportion of residents who have catheters would not be desirable.

1. Gould CV, Umscheid CA, Agarwal R, Kuntz G, Pegues DA; the Healthcare Infection Control Practices Advisory Committee. Guideline for prevention of catheter-associated urinary tract infections 2009. Atlanta: Centers for Disease Control and Prevention, 2009. Available from http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/CAUTI_Guideline2009final.pdf.

2f.2 Methods to identify statistically significant and practically/meaningfully differences in performance *(type of analysis & rationale)*:
Because the computed scores are not estimates, but include all residents who meet the measure criteria, in terms of discriminating performance, the computed scores can be used to make valid comparisons.

2f.3 Provide Measure Scores from Testing or Current Use *(description of scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningfully differences in performance)*:
An analytical team at the University of Colorado Health Sciences Center examined the urinary tract infection rates at the facility level.(1) Below are the measure scores from testing or current use. For 13,836 facilities, the mean for the urinary tract infection measure was 9.0% and the standard deviation was 5.4%. The quality measure varied from 2.6% at the 10th percentile to 16.2% at the 90th percentile; only 3.5% of facilities had no residents with urinary tract infections.

See attached Table 1: Measure Variability Across Facilities.

1. Brega A, Hittle D, Goodrich G, Kramer A, Conway K, Levy C. Empirical review of publicly reported nursing

2f C☐ P☐ M☐ N☐

Comment [KP16]: 2e. For outcome measures and other measures (e.g., resource use) when indicated:
•an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified and is based on patient clinical factors that influence the measured outcome (but not disparities in care) and are present at start of care;[Error! Bookmark not defined.] OR rationale/data support no risk adjustment.

Comment [k17]: 13 Risk models should not obscure disparities in care for populations by including factors that are associated with differences/inequalities in care such as race, socioeconomic status, gender (e.g., poorer treatment outcomes of African American men with prostate cancer, inequalities in treatment for CVD risk factors between men and women). It is preferable to stratify measures by race and socioeconomic status rather than adjusting out differences.

Comment [KP18]: 2f. Data analysis demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically meaningful differences in performance.

Comment [k19]: 14 With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who received smoking cessation counseling (e.g., 74% v. 75%) is clinically meaningful; or whether a statistically significant difference of $25 in cost for an episode of care (e.g., $5,000 v. $5,025) is practically meaningful. Measures with overall poor performance may not demonstrate much variability across providers.

home quality measures. Denver: Division of Health Care Policy and Research University of Colorado at Denver; Abt Associates, Inc, 2007.

2g. Comparability of Multiple Data Sources/Methods

2g.1 **Data/sample** *(description of data/sample and size)*: This is not applicable.

2g.2 **Analytic Method** *(type of analysis & rationale)*:
This is not applicable.

2g.3 **Testing Results** *(e.g., correlation statistics, comparison of rankings)*:
This is not applicable.

2g C☐ P☐ M☐ N☐ NA☐

Comment [KP20]: 2g. If multiple data sources/methods are allowed, there is demonstration they produce comparable results.

2h. Disparities in Care

2h.1 **If measure is stratified, provide stratified results** *(scores by stratified categories/cohorts)*: The measure is not stratified by race, ethnicity, income, or rural/urban location. As noted earlier, the measure is limited to long stay residents.

2h.2 **If disparities have been reported/identified, but measure is not specified to detect disparities, provide follow-up plans:**
While MDS 3.0 collects data on the resident's race, there are no current plans to stratify the measure by race or any other characteristic.

2h C☐ P☐ M☐ N☐ NA☐

Comment [KP21]: 2h. If disparities in care have been identified, measure specifications, scoring, and analysis allow for identification of disparities through stratification of results (e.g., by race, ethnicity, socioeconomic status, gender);OR rationale/data justifies why stratification is not necessary or not feasible.

TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Scientific Acceptability of Measure Properties?*

2

Steering Committee: Overall, to what extent was the criterion, *Scientific Acceptability of Measure Properties*, **met?**
Rationale:

2 C☐ P☐ M☐ N☐

3. USABILITY

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making. (evaluation criteria)

Eval Rating

3a. Meaningful, Understandable, and Useful Information

3a.1 **Current Use:** In use

3a.2 **Use in a public reporting initiative (disclosure of performance results to the public at large)** (*If used in a public reporting initiative, provide name of initiative(s), locations, Web page URL(s). If not publicly reported, state the plans to achieve public reporting within 3 years*):
The urinary tract infection measure is available on the Nursing Home Compare Web site:
http://www.medicare.gov/NHCompare/Include/DataSection/Questions/SearchCriteriaNEW.asp?version=default&browser=IE%7C6%7CWinXP&language=English&defaultstatus=0&pagelist=Home&CookiesEnabledStatus=True

3a.3 **If used in other programs/initiatives (***If used in quality improvement or other programs/initiatives, name of initiative(s), locations, Web page URL(s). If not used for QI, state the plans to achieve use for QI within 3 years***):**
The Centers for Medicare & Medicaid Services expects that the urinary tract infection quality measure will be used by nursing homes as a tool to improve quality of care by keeping nursing home residents free of infections. Data on facility performance on the quality measures are also used by surveyors to identify problem areas when they inspect nursing homes.

3a C☐ P☐ M☐ N☐

Comment [KP22]: 3a. Demonstration that information produced by the measure is meaningful, understandable, and useful to the intended audience(s) for both public reporting (e.g., focus group, cognitive testing) and informing quality improvement (e.g., quality improvement initiatives). An important outcome that may not have an identified improvement strategy still can be useful for informing quality improvement by identifying the need for and stimulating new approaches to improvement.

Testing of Interpretability (*Testing that demonstrates the results are understood by the potential users for public reporting and quality improvement*)

3a.4 **Data/sample** *(description of data/sample and size)*: A recent study by Castle found that consumers could accurately interpret the quality information given for all the measures reported by Nursing Home Compare (1).

For the Castle study, an initial sample of 8,000 family members with elders living in one of 200 randomly selected nursing homes was used.(1) In each facility one family member (or significant other) was identified as the family contact person for each of 40 residents by nursing home staff. A total of 615 facilities were approached before the target of 200 participating facilities was achieved, giving a facility participation rate of 33%. From these 200 facilities, a total of 4,754 surveys were returned (i.e., family response rate = 59%).

1. Castle N. The Nursing Home Compare report card: consumers' use and understanding. J Aging Soc Policy. 2009;21(2), 187-208.

3a.5 **Methods** *(e.g., focus group, survey, QI project)*:
A comprehension index was developed to examine whether the information contained in Nursing Home Compare for each quality measure was understood by family members.(1) The comprehension index ranged from 0.0 to 8.0.

1. Castle N. The Nursing Home Compare report card: consumers' use and understanding. J Aging Soc Policy. 2009;21(2), 187-208.

3a.6 **Results** *(qualitative and/or quantitative results and conclusions)*:
Castle found that 31% of the consumers used the Internet in choosing a nursing home; 12% recalled using Nursing Home Compare, and in general, the consumers' comprehension index scores indicated a relatively good understanding of the measures. The comprehension index for the urinary tract infection measure was 5.62 on a scale of 0.00 to 8.00, slightly above average for the non-risk-adjusted measures.

3b/3c. Relation to other NQF-endorsed measures

3b.1 **NQF # and Title of similar or related measures:**
The proposed measure is intended to replace NQF # 0196 Residents with a urinary tract infection as the data source has changed: the MDS 2.0 is being replaced by the MDS 3.0. Other related measures are NQF # 0138 Urinary catheter-associated urinary tract infection for intensive care unit (ICU) patients and NQF # 0281 Urinary infections (PQI 12).

(for NQF staff use) **Notes on similar/related endorsed or submitted measures:**

3b. Harmonization
If this measure is related to measure(s) already endorsed by NQF (e.g., same topic, but different target population/setting/data source or different topic but same target population):
3b.2 **Are the measure specifications harmonized? If not, why?**

3b
C☐ P☐ M☐ N☐ NA☐

3c. Distinctive or Additive Value
3c.1 **Describe the distinctive, improved, or additive value this measure provides to existing NQF-endorsed measures:**
The proposed differs from the current measure by using 6 months of data to calculate the measure and address the issue of seasonal variation. The proposed measure differs from other NQF endorsed measures relating to this topic due to the focus on nursing facility residents versus patients in an acute care ICU and does not focus on acute care admissions for this condition.

5.1 **If this measure is similar to measure(s) already endorsed by NQF (i.e., on the same topic and the same target population), Describe why it is a more valid or efficient way to measure quality:**

3c
C☐ P☐ M☐ N☐ NA☐

Rating: C=Completely; P=Partially; M=Minimally; N=Not at all; NA=Not applicable

Comment [KP23]: 3b. The measure specifications are harmonized with other measures, and are applicable to multiple levels and settings.

Comment [k24]: 16 Measure harmonization refers to the standardization of specifications for similar measures on the same topic (e.g., *influenza immunization* of patients in hospitals or nursing homes), or related measures for the same target population (e.g., eye exam and HbA1c for *patients with diabetes*), or definitions applicable to many measures (e.g., age designation for children) so that they are uniform or compatible, unless differences are dictated by the evidence. The dimensions of harmonization can include numerator, denominator, exclusions, and data source and collection instructions. The extent of harmonization depends on the relationship of the measures, the evidence for the specific measure focus, and differences in data sources.

Comment [KP25]: 3c. Review of existing endorsed measures and measure sets demonstrates that the measure provides a distinctive or additive value to existing NQF-endorsed measures (e.g., provides a more complete picture of quality for a particular condition or aspect of healthcare, is a more valid or efficient way to measure).

TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Usability*?	**3**
Steering Committee: Overall, to what extent was the criterion, *Usability*, met? **Rationale:**	**3** **C☐** **P☐** **M☐** **N☐**
4. FEASIBILITY	
Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement. (evaluation criteria)	Eval Rating
4a. Data Generated as a Byproduct of Care Processes **4a.1-2 How are the data elements that are needed to compute measure scores generated?** Data generated as byproduct of care processes during care delivery (Data are generated and used by healthcare personnel during the provision of care, e.g., blood pressure, lab value, medical condition), Coding/abstraction performed by someone other than person obtaining original information (E.g., DRG, ICD-9 codes on claims, chart abstraction for quality measure or registry)	**4a** **C☐** **P☐** **M☐** **N☐**
4b. Electronic Sources **4b.1 Are all the data elements available electronically?** (*elements that are needed to compute measure scores are in defined, computer-readable fields, e.g., electronic health record, electronic claims*) No **4b.2 If not, specify the near-term path to achieve electronic capture by most providers.** Not applicable.	**4b** **C☐** **P☐** **M☐** **N☐**
4c. Exclusions **4c.1 Do the specified exclusions require additional data sources beyond what is required for the numerator and denominator specifications?** No **4c.2 If yes, provide justification.**	**4c** **C☐** **P☐** **M☐** **N☐** **NA☐**
4d. Susceptibility to Inaccuracies, Errors, or Unintended Consequences **4d.1 Identify susceptibility to inaccuracies, errors, or unintended consequences of the measure and describe how these potential problems could be audited. If audited, provide results.** Issues regarding errors in using the urinary tract infection quality measure have been reported. However, the urinary tract infection measure is the only one in the existing measure set that addresses the critical issue of infections in nursing facilities. Moreover, as discussed earlier, changes to the manual for the MDS 3.0 will address many of the causes for errors by requiring more reliable evidence of urinary tract infection.(1, 2, 3, 4) 1. Centers for Medicare & Medicaid Services. Long-term care facility resident assessment instrument user's manual. Baltimore, MD. 2009. Available at http://www.cms.hhs.gov/NursingHomeQualityInits/25_NHQIMDS30.asp#TopOfPage. 2. Abt Associates, Inc.; Stepwise Systems, Inc.; Qualidigm. Data Assessment and Verification (DAVE 2) project—MDS two-stage discrepancy findings, April-December 2006. Cambridge, MA: Abt Associates, Inc, 2007. 3. Saliba D, Buchanan J. Development and Validation of a Revised Nursing Home Assessment Tool: MDS 3.0.	**4d** **C☐** **P☐** **M☐** **N☐**

Comment [KP26]: 4a. For clinical measures, required data elements are routinely generated concurrent with and as a byproduct of care processes during care delivery. (e.g., BP recorded in the electronic record, not abstracted from the record later by other personnel; patient self-assessment tools, e.g., depression scale; lab values, meds, etc.)

Comment [KP27]: 4b. The required data elements are available in electronic sources. If the required data are not in existing electronic sources, a credible, near-term path to electronic collection by most providers is specified and clinical data elements are specified for transition to the electronic health record.

Comment [KP28]: 4c. Exclusions should not require additional data sources beyond what is required for scoring the measure (e.g., numerator and denominator) unless justified as supporting measure validity.

Comment [KP29]: 4d. Susceptibility to inaccuracies, errors, or unintended consequences and the ability to audit the data items to detect such problems are identified.

Contract No. 500-00-0027/Task Order #2. Santa Monica, CA: Rand Corporation, Apr 2008. Available from http://www.cms.hhs.gov/NursingHomeQualityInits/Downloads/MDS30FinalReport.pdf.

4. Stevenson KB, Moore JW, Sleeper B. Validity of the Minimum Data Set in identifying urinary tract infections in residents of long-term care facilities. J Am Geriatr Soc. 2007;52: 707-711.

4e. Data Collection Strategy/Implementation

4e.1 **Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data/missing data, timing/frequency of data collection, patient confidentiality, time/cost of data collection, other feasibility/ implementation issues:**
The data collection method, the MDS, is already in operation and has been for many years.

4e.2 **Costs to implement the measure** (*costs of data collection, fees associated with proprietary measures*)**:**
The data are collected as part of an existing, legally mandated process. There will be no additional costs to collect this information since it is already collected.

4e.3 **Evidence for costs:**
This is not applicable.

4e.4 **Business case documentation:** The proposed measure relies on data from the MDS 3.0. As there is no change in the data collection method for the MDS 3.0 as compared with its predecessor, the MDS 2.0, we do not anticipate any additional burden to nursing facilities. MDS 2.0, and soon to be MDS 3.0, data are collected as part of an existing, federally mandated process used for payment and quality monitoring purposes.

4e C☐ P☐ M☐ N☐

Comment [KP30]: 4e. Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, etc.) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use).

TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Feasibility*?

4

Steering Committee: Overall, to what extent was the criterion, *Feasibility*, **met?**
Rationale:

4 C☐ P☐ M☐ N☐

RECOMMENDATION

(for NQF staff use) **Check if measure is untested and only eligible for time-limited endorsement.**

Time-limited ☐

Steering Committee: Do you recommend for endorsement?
Comments:

Y☐ N☐ A☐

CONTACT INFORMATION

Co.1 **Measure Steward (Intellectual Property Owner)**
Co.1 **Organization**
Centers for Medicare & Medicaid Services, 7500 Security Boulevard, Mail Stop S3-02-01, Baltimore, Maryland, 21244-1850

Co.2 **Point of Contact**
Judith, Tobin, PT, MBA, Judith.Tobin@cms.hhs.gov, 410-786-6892-

Measure Developer If different from Measure Steward
Co.3 **Organization**

RTI International, 1440 Main Street, Suite 300, Waltham, Massachusetts, 02451-1623

Co.4 **Point of Contact**
Roberta, Constantine, RN, MBA, PhD, rconstantine@rti.org, 781-434-1711-

Co.5 **Submitter If different from Measure Steward POC**
Roberta, Constantine, RN, MBA, PhD, rconstantine@rti.org, 781-434-1711-, RTI International

Co.6 **Additional organizations that sponsored/participated in measure development**

ADDITIONAL INFORMATION

Workgroup/Expert Panel involved in measure development
Ad.1 **Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.**
See attached Table 2: Nursing Home Quality Measures Technical Expert Panel (January 2009).

This technical expert panel met over 2 days in January 2009 to review an environmental scan of the current quality measures and to make recommendations regarding their transition from MDS 2.0 to MDS 3.0.

Ad.2 **If adapted, provide name of original measure:** This measure was adapted from the measure of the same name derived from MDS 2.0 data.
Ad.3-5 **If adapted, provide original specifications URL or attachment**
http://www.cms.hhs.gov/NursingHomeQualityInits/downloads/NHQIQMUsersManual.pdf

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.6 **Year the measure was first released:** 2002
Ad.7 **Month and Year of most recent revision:** 02, 2010
Ad.8 **What is your frequency for review/update of this measure?** every 3 years.
Ad.9 **When is the next scheduled review/update for this measure?** 02, 2013

Ad.10 **Copyright statement/disclaimers:**

Ad.11 -13 **Additional Information web page URL or attachment:** Attachment Urinary Tract Infection tables_FINAL-634045030040580000.doc

Date of Submission (*MM/DD/YY*)**:** 10/11/2010