LeadingAge Wisconsin Note:

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This document was prepared under the direction of the Department of Health Services (DHS) which intends to, "....produce a nursing home quality performance measurement system that has been tested for credibility and is ready for statewide implementation. The ultimate outcome of this initiative is to improve clinical outcomes for residents, which will also improve their quality of life."

LeadingAge Wisconsin assumes the final performance metrics developed by DHS also will be reflected in future pay-for-performance systems employed by the Department.

The DHS nursing home quality performance measurement system is expected to be finalized by October 2013.

A Wisconsin Nursing Home Clinical Performance Measurement System – Options and Issues

I. Introduction

Wisconsin needs high quality nursing homes to meet the needs of its most vulnerable citizens. In order to achieve high quality nursing home care and to continuously improve it, the Department of Health Services must first define quality and determine how to measure it. The first phase of this initiative will produce a nursing home quality performance measurement system that has been tested for credibility and is ready for statewide implementation. The ultimate outcome of this initiative is to improve clinical outcomes for residents, which will also improve their quality of life.

WI DHS has engaged the Center for Health Systems Research and Analysis (CHSRA) of the University of Wisconsin – Madison to conduct the first phase of this initiative. Specifically,

- CHSRA will research nursing home performance data sources and measures, including experiences/concerns of those currently using these data sources and measures.
- CHSRA will solicit Wisconsin nursing home stakeholder input in the process of defining, testing, implementing and managing a nursing home performance measurement system.
- CHSRA will design prototype of such a system and test it for statistical validity, reliability and credibility.
- CHSRA will present a successfully tested, data-driven nursing home clinical performance measurement system ready for statewide implementation. A final report summarizing the system will be delivered no later than October 30, 2013.

The CMP funding for this project may only be used for the benefit and protection of nursing home residents. Therefore, once complete, the nursing home quality performance measurement system will be available to Wisconsin nursing home trade associations and Department staff responsible for the regulation of nursing homes.

II. Project Timetable

The following table highlights the key tasks to completing the initial phase of the initiative. This report corresponds to Task 2. The objective of this report is to summarize options for clinical performance data sources, measures and reporting systems. In addition, the report discusses performance measurement issues and possible criteria to be used in selecting and refining candidate measures. The report does not define the measures to be implemented in the later

stages of the project. Rather, the goal of this report is to gather options and issues so that WI DHS staff, with input from nursing home stakeholders, can decide on the criteria to be used to develop initial nursing home performance measures (Tasks 5, 6 and 7), select measures for testing (Task 8), assess test measure performance (Tasks 10 and 12), and make final measure selections (Tasks 13 through 16).

Task #	Task Description	Tentative Completion Date
1	Assemble Candidate Measures Literature Review NH measures used by DOJ/OIG New MDS 3.0 QIQM specifications and coding	11/30/2012
2	Report to DLTC - Candidate Measures	11/30/2012
3	Recruit Stakeholder Panel	12/21/2012
4	Distribute Candidate Measures Report to Panel	12/21/2012
5	Stakeholder Panel Meeting – Brainstorm Options, Issues and Criteria	1/31/2013
6	Report to DLTC – Options, Issues and Criteria	2/15/2013
7	Distribute Options/Issues/Criteria Report to Panel	2/28/2013
8	Stakeholder Panel Meeting – Select Measures for Testing	3/31/2013
9	Specifications and SAS Code Development for Test Measures	5/31/2013
10	Assess Test Measures	5/31/2013
11	Develop Measure Reporting Options	5/31/2013
12	Report to DLTC - Test Measure Assessment and Reporting System Options	5/31/2013
13	Selection of Final Measures and Reporting System (with DLTC)	6/15/2013
14	Construct Prototype Measure Reports and Demonstration Reporting System	7/31/2013
15	Stakeholder Panel Meeting – Review Final Measure Selection and Demonstrate Reporting System	8/31/2013
16	Finalize Measure and Reporting System Specifications; Implement Final Specification in Demonstration Reporting System	9/30/2013
17	Draft Final Report to DLTC	9/30/2013
18	Final Report to DLTC	10/30/2013

III. Scope of Nursing Home Clinical Performance System

There are several dimensions of a performance measurement system for which boundaries need to be defined, including the service providers, population receiving services, the services provided, the type of performance being measured and the reporting period.

A. Nursing Home Service Providers

The scope of provider types to be included in the reporting system must be determined.

1. Should ICF/IDs (stand-alone and distinct-part) be included?

Including ICF/IDs is challenging in two ways. First, the population served differs so significantly from the elderly/disabled population typically served by nursing facilities. So, if included, the results for these providers must be segregated from the results for nursing facilities. Second, ICF/IDs are not required to submit MDS resident assessment information. Consequently, there are no MDS-based quality indicators available.

DECISION: _Exclude ICF/IDs (The available CMP funds cannot be used for ICF/ID quality improvement.)_____

2. What licensing/certification categories should be included?

Most nursing facilities are licensed for skilled care. A few are limited to providing intermediate care (Zimmerman in Reedsburg and Sky View in Hurley). One is licensed as an institute for mental disease (Trempealeau County). Within the skilled care facilities, there are units that specialize in treating residents with brain injuries (e.g., Clearview in Dodge County) or with behavioral problems (e.g., Clearview and Ravenwood in La Crosse County).

DECISION: _____

Most nursing facilities are certified to provide both Medicare and Medicaid services. Some are only Medicare certified (12) or only Medicaid certified (11). A few are neither Medicare nor Medicaid certified (including Zimmerman, the Trempealeau IMD, the county behavioral facilities and a small 6-bed facility in Delafield). As with ICF/IDs, nursing facilities that are not Medicare or Medicaid certified are not required to submit MDS assessments to CMS.

DECISION: _____

3. Should swing bed hospitals be included?

There are 56 swing bed hospitals with beds that can be converted to nursing home care. Swing bed residents are often covered by Medicare Part A for post-acute and rehabilitation services following an acute hospital stay. Some states provide Medicaid coverage in swing beds in areas with limited access to conventional nursing facilities.

Non-critical access hospitals must complete MDS 3.0 assessments according to the Medicare SNF PPS schedule, but are not required to complete those required by OBRA (i.e., the comprehensive annual and partial quarterly care planning assessments). Critical access hospitals are exempt from submission of MDS 3.0 assessments for swing bed residents (although they must perform and document appropriate care planning).

DECISION: _____

B. Target Population Served

Within a nursing facility, the resident population can be characterized in several ways.

1. Which payer populations should be included?

A dually-certified skilled care nursing facility may have residents covered solely by Medicare (e.g., non-Medicaid post-acute Part A stays), solely by Medicaid (e.g., frail elders with functional or cognitive care needs) , by both Medicare and Medicaid (e.g., Medicare Part A stays after 20 days with Medicaid paying the daily copayment), or by neither Medicare nor Medicaid (e.g., private-pay residents).

DECISION: _____

2. Which service populations should be included?

A nursing facility resident may receive post-acute care, chronic medical care, functional/cognitive/behavioral care, hospice care, or a combination of these service types.

While most post-acute care may be covered by Medicare, some is covered by Medicaid and other payers. As noted above, Medicare and Medicaid share the cost of Part A stays after 20 days for Medicaid eligible residents. (The current copayment is $148 per day.) The CMS quality measures differentiate between short-stay episodes and long-stay episodes based solely on the number of days of care since admission, without regard to payer or services utilized. So, the labels “Medicare”, “Post-Acute” and “Short-Stay” are not equivalent. Each of the three dimensions should be assessed for inclusion in the performance measurement system.

Residents receiving highly specialized services, such as brain injury care, should be considered for exclusion or special attention in the reporting system. Similarly, residents whose care goals differ significantly from most residents, such as those receiving hospice care, should be excluded or given special attention.

If all residents are included in the performance reporting, then care must be taken in defining measures appropriate for each population and in comparing results across facilities with different population mixes.

DECISION: _____

C. Services Subject to Clinical Performance Measurement

Not all services provided by nursing facilities can be characterized as clinical. When considering candidate performance measures, some will clearly be clinical (e.g., a process measure that indicates the percentage of residents at risk for pressure sores who receive appropriate preventive care) and others will clearly be non-clinical (e.g., the percentage of residents with HD-TV in their room). Other measures will combine clinical and non-clinical aspects. For example, the percentage of residents engaging socially with other residents measures both quality of life and the cognitive benefits of remaining active. Still others may be positively correlated with quality of life, but negatively correlated with clinical performance. For example, the percentage of residents complaining of discomfort may be at odds with efforts at aggressive rehabilitation. A criteria is needed to determine which candidate measures satisfy the clinical focus for the performance measurement system.

DECISION: _____

D. Measurement Type

Measures can be characterized as resident-level process measures, resident-level outcome measures, facility-level process measures and facility-level outcome measures.

1. Resident-level process measures

Resident-level process measures assess, resident by resident, whether appropriate steps were taken to prevent, identify and treat health problems of the resident (medical, functional, cognitive and behavioral). For example, the percentage of residents receiving a flu vaccination assesses compliance with an accepted care norm. Aside from numerous vaccination quality measures, there are very few resident-level process measures included in CMS's Nursing Home Compare or CASPER reporting systems. In fact, the other CMS process measures (use of restraints, catheters and anti-psychotic drugs) focus on possible excessive use of certain care options, rather than on providing care when appropriate.

The MDS Care Area Assessment process (CAA) uses MDS 3.0 items to trigger up to 20 different care areas that may require additional assessment and care planning. A possible approach to defining additional resident-level process measures is to determine whether a facility properly follows up on triggered

CAA's. Unfortunately, much of the information needed to make this determination is not conveniently available and would need to be self-reported.

2. Resident-level outcome measures

Resident-level outcome measures identify residents with undesirable (or desirable) outcomes during their stay. Most of the CMS quality measures fall into this category, including QM's related to falls, pressure ulcers, decline in functional status, urinary tract infections, depression, weight loss, pain, and incontinence.

Since many factors may affect whether a resident experiences an undesirable outcome, not all of which are attributable to the provider, outcome measures should be appropriately risk-adjusted to remove the impact of these uncontrollable factors.

If the provider exhibits an unexpectedly high risk-adjusted rate of undesirable outcomes, the implication is that the care provided was inadequate. This inference is confounded by sampling error for small facilities. That is, if only a few residents are the basis for the facility outcome rate, poor results may be entirely due to a chance occurrence of the outcome, despite the best efforts of the facility. So, some form of credibility adjustment is needed when reporting aggregated resident-level outcome measures. The most common approach is not to report measures based on fewer that a specified number of residents (10 to 30, typically). Another approach, less frequently adopted, is the use confidence intervals or a similar statistical assessment of the strength of evidence.

3. Facility-level process measures

Facility-level process measures, for our purpose, are not simply an aggregation of resident-level process measures. Rather, they include measures based on facility-wide information not easily broken down by resident and typically within the control of the facility. For example, the percentage of staff completing a specific training program might serve as such a measure. Skilled nursing staff hours per case-mix-adjusted resident day might be another. Participation in certified quality improvement programs might serve as a candidate in this area as well.

Risk adjustment can be critical for some of these measures (e.g., staffing levels) and not as important for others (e.g., evidence of a strong training program). Credibility adjustment is probably not a significant concern, since we can directly observe the characteristics of interest (e.g., payroll data for staffing, training documentation, certifications). Data reliability may be an issue, since many of the measures may be based on self-reported data.

4. Facility-level outcome measures

Again, facility-level outcome measures, for our purpose, are not simply aggregates of resident-level outcomes. Rather, this category would include facility-level results which are to some extent out of the control of the facility. Results from recent facility surveys (i.e., deficiency-based measures) fall into this category. Survey results are commonly used in measurement systems, often without any risk adjustment. This may be appropriate within a single reporting state where the same protocols are used for every survey. If the reporting system includes facilities in multiple states or a single state in which the survey protocols are changing (e.g., the rollout of QIS), then differences in expected deficiency citation patterns by state and protocol system should be identified and removed from the reported results. Data reliability for deficiency-based measures should be good since the process is subject to facility review and appeal. The need for credibility adjustment depends on the details of the survey protocol (sample sizes, etc.).

Profitability, cost effectiveness, market share, lawsuits, regulatory sanctions, public image and staff retention are examples of outcomes that are affected, in varying degrees, by the facility's success or failure in managing the care of its residents. While it may be impossible to separate the impact of the facility's clinical performance in these outcomes, they may be useful when identifying an appropriate peer group for comparison of other process or outcome measures. For example, these facility-level outcomes might be used to identify a high-performing comparison group whose average process/outcome measure results would serve as a performance gold-standard for other facilities.

E. Reporting Period

The reporting period and frequency will likely be dictated by the data sources used to generate the measures. MDS data is collected at least quarterly, while survey-based deficiency results and provider cost report information is collected no more frequently than annually. Claim and encounter data as well as complaint-based deficiencies are continuously updated. Most data is subject to a significant processing lag (especially audited cost reports). Since CMS's quality measurement system employs a quarterly reporting period, it may be appropriate to use the same reporting period for the WI system until convinced otherwise.

IV. Data Sources

A. MDS assessment and tracking records

Minimum Data Set (MDS) data is available for all residents in any facility certified to provide either Medicare or Medicaid series. Annual comprehensive and quarterly partial assessments are required as the basis for care planning under OBRA (the

Omnibus Reconciliation Act). With the advent of the Medicare SNF Prospective Payment System in 1998, additional assessments are required for SNF Part residents at 5, 14, 30, 60 and 90 days so that residents can be classified into Resource Utilization Groups (RUGs) for payment purposes. Additional tracking records (admission, re-entry and discharge) are also required. In addition to care planning and rate determination, MDS records are also used to compute quality indicators, intended to partially offset the incentive to minimize expenditures on care associated with a prospective pricing system.

Many states, including Wisconsin, have adopted variations on CMS's Medicare RUG-based payment system for use in setting Medicaid payment rates.

The MDS assessment process, the RUG resident classification system and the quality indicators were revised effective October 1, 2010. A point of emphasis for the update was to improve the validity and reliability of the MDS items. (See the Rand report at http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/NHQIMDS30.html)

While the MDS data is self-reported by facilities, great effort has been taken to standardize the process of collecting and reporting the data, relying heavily on the professionalism of the nursing staff for the accuracy of the information. The nursing home audit process includes a component intended to audit the MDS process based on a random sample of assessment records. Medicare Fiscal Intermediaries and, more recently, Recovery Audit Contractors (RACs) are responsible for identifying erroneous or fraudulent claims for reimbursement of Medicare services, including the accuracy of RUG classifications derived from MDS data.

B. WI LTC functional screen

While the MDS provides a comprehensive ongoing profile of resident characteristics, there is no comparable data source before an individual enters a nursing home or after they are discharged. If, for example, we wish to measure facility success in relocating residents to the community, it might be helpful in defining successful relocations to have post-discharge health status information. If the discharged resident is enrolled in Family Care, PACE/Partnership or IRIS, WI LTC Functional Screen data may be available to fill this void. This data source is only available for Medicaid managed care enrollees however.

C. NH service claims/encounters

If it is necessary to break down performance measures by payer, Medicaid claim and encounter data is needed to accurately determine which residents and NH services are covered by Medicaid. Similarly, Medicare claim and encounter data can identify Medicare NH residents and services. Claim data can also provide more detail on what NH services are provided and resident diagnoses than MDS data alone.

D. Other care provider claims/encounters

Claim and encounter data related to non-NH services might be used to measure the frequency of hospitalization or ER visits. AHRQ's PQI measures of unnecessary hospitalization, for example, might be applied to nursing home resident populations. The fact that most Medicaid NH residents are covered for acute and primary care by Medicare means that Medicare claims are needed, even if the focus is restricted to Medicaid residents.

Other provider claims might also be used to assess the nursing home provider's role and success in coordinating the resident's overall health care plan while a resident and after discharge to the community, another nursing home or to a hospital.

E. Drug claims

Resident drug claims can be merged with MDS data to identify potential issues in medication management, such as using inappropriate drugs, using unsafe combinations of drugs, or lack of adherence to a drug regimen. While the nursing home provider is only partly responsible for drug management of its residents (along with the physician, LTC pharmacy and Medicare Part D Plan), this information may be helpful to the NH in its role.

Prior to Medicare Part D in January 2006, CHSRA generated semi-annual Medicaid resident drug quality indicator reports using MDS and Medicaid drug claim data. If ongoing access to Part D drug claims could be obtained, a similar NH drug QI report could be generated for dual-eligible residents and Medicare-only residents.

F. Survey and complaint deficiencies

Nursing home surveys (unannounced inspections performed by the state every 9 to 15 months) and complaint investigations result in possible deficiency citations in the areas of resident safety, quality of care and quality of life. Each cited deficiency is assigned a scope and severity code. The process is subject to appeal. Summaries of the cited deficiencies (by specific category, or F-tag) and scope/severity levels are commonly reported in NH performance measurement systems. This data is readily available and is stored nationally in the OSCAR database.

G. Staffing (payroll)

Many NH performance measurement systems report nursing staff levels per resident day, possibly adjusted for the case mix of the residents. CMS uses staffing data collected during the survey process and stored in OSCAR for its staffing measures. The survey-based staffing data relates to the 14 days preceding the survey. Aside from the OSCAR staffing data and staffing information in the provider cost reports, there are no other publicly available data sources on NH staffing levels. Self-reported values might also be considered.

H. Cost reports

Dually certified nursing homes must submit cost reports to Medicare and Medicaid each year. Both cost reports are in a standardized format and are subjected to an audit process. Both include information on the all residents, with additional information used to impute the costs associated with the Medicare or Medicaid resident populations. The cost reports are a source of information on facility characteristics (e.g., ownership type, number of beds, location, etc.), resident characteristics (e.g., resident days by payer, service category, etc.) and financial values (e.g., revenues and expenditures by cost center, etc.).

The Medicaid cost report staff cost schedules might provide an alternative to OSCAR staffing data. Issues include understanding the staff classifications employed in the schedules, accounting properly for contracted staff (where only dollars spent and not hours of care may be available), the reliability of the reported staff hours (since it is not directly used in the rate-setting process) and the lag in obtaining data due to the submission and auditing processes.

Medicare cost reports might contain additional useful information. Issues are similar to those listed with Medicaid cost reports. Access to Medicare cost reports is complicated for hospital-based SNFs. In these cases, the SNF information is submitted as part of the hospital cost report.

I. Medical records

Nursing home medical records might provide a variety of additional data beyond what is recorded in the MDS. Until these records are available in a standardized digital format, however, it is likely that performance measurement systems will need to rely on NH staff to extract/abstract any data needed from this source.

J. Vital statistics

If the performance measures include information on resident discharge status, e.g., resident mortality, the MDS discharge tracking records might be supplemented by vital statistics records (e.g., death records). If a resident dies within a few days of discharge (say, to a hospital), the MDS discharge record may only indicate a hospital discharge. Incorporating death records would fill this gap and allow for a measure that optionally includes deaths within “n” days of discharge.

Fall measurement using only MDS day might miss falls that result in death. The MDS death discharge tracking record does not require the falls information. Death records may provide a cause of death that could be used to fill this gap in fall measurement. (Of course, NH self-reported additional information on deaths might also be used.)

K. NH buildings (age and layout) and other physical resources

While information on the NH physical plant may be more directly related to quality of life measures, it might be useful in some clinical measures (e.g., unit layouts used to document infection control provisions). The Medicaid cost report provides some of this information (e.g., square footage, building valuation and age, etc.). Additional information might be on file with DQA or with DLTC related to property incentive programs and anything else will likely need to be self-reported by the NH.

V. Measurement Issues

There are a variety of issues that must be addressed when selecting or designing performance measures. As with all of the listings in this report, the initial issues listing that follows should be augmented by the NH stakeholders.

A. Source data availability

Data availability is critical if the reporting system is to avoid significant data collection and submission efforts by the nursing home providers.

DECISION: _____

B. Source data reliability

The required level of reliability (and validity) depend upon the purpose of the reported measures. Less rigorous auditing is needed if the purpose is to provide nursing homes with indicators of possible areas of concern (or excellence). The quality indicators can be investigated by the NH and, if confirmed, the problems addressed. The cost of false positives is limited to the effort expended in the follow-up process. False negatives are the bigger concern in this setting. False negatives can be reduced by adjusting the action thresholds related to the measure so that a larger percentage of values require investigation by the NH. Information on the false positives and false negatives can then be reported back and used to refine the quality indicators and thresholds in the future.

If the performance measures will be published or used to adjust NH payment levels at some point, then the cost of false positives can be much greater. Unless the measure can be made more reliable/valid, reductions in the rate of false positives will come at the cost of increasing the rate of false negatives.

DECISION: _____

C. Reporting frequency and lag

Ideally, performance measurements would be immediately available continuously updated. Due to data constraints and the cost of generating and reporting results, discrete reporting will be a some specified frequency and subject to some processing lag.

Given that MDS-based quality indicators are likely to be a major component of the system and MDS data submission is quarterly for most residents, a quarterly reporting cycle is reasonable. Except for Medicare residents, only one third of residents would have new MDS data on a monthly cycle. Reporting less frequently than quarterly would delay recognition of emerging trends unnecessarily.

MDS data used for determining WI Medicaid NH case mix indices is lagged five months from the picture date to the extract date and six months to the rate effective date. If the same extract lag is employed in the performance measurement system, the reports for a calendar quarter would be generated in the sixth month after the close of the quarter. So, for example, results for 4Q2013 would be released on July 1, 2014. In this setting, preliminary results for 1Q2014 could be generated with the understanding that final values for 1Q2014 would not be released until October 1, 2014.

Deficiency-based measures could be based on the most recent "n" surveys available on or prior to the reporting extract date. Roughly one fourth of facilities would have updated deficiency results each quarterly reporting cycle.

DECISION: _____

D. Risk adjustment

Risk adjustment of performance measures attempts to isolate the portion of a measure for which the provider is to be held accountable. Of the many factors that can affect the occurrence of a resident-level outcome, for example, we seek to remove the impact of only those factors over which the provider has no control and for which the provider is not expected to take preventative action. Obviously, this can be a contentious issue.

For example, suppose that an undesirable resident outcome is known (clinically or empirically) to increase in frequency with resident acuity. To provide a fair comparison between two facilities with differing resident acuity levels, it might seem appropriate to risk-adjust the outcome measure using each facility's case mix index. So, if Facility A has a CMI of 1.00 and an unadjusted outcome measure of 10%, while Facility B has a CMI of 1.20 and an unadjusted outcome rate of 12%, then we might conclude their performance was equivalent (assuming, for simplicity, that the outcome rate is directly proportional to the CMI). This seems fair until we recognize that the direct care rate paid to Facility B is 20% greater than that paid to Facility A. Now the performance comparison is not so clear. The question of interest is "Given the difference in CMI's and payment rates, what is the expected outcome rate for each facility?" You might reasonably conclude that the differences in CMI are offset by differences in rate payments, so that we should remove CMI as a risk adjustment factor. You might also reasonably conclude that, even if Facility B targets all of the additional daily rate at minimizing the undesirable outcome rate, that the expected rate will still exceed that of Facility A.

Once the appropriate risk adjustment factors are identified, there are two common approaches to removing their impact on the measure. The simplest approach is to partition the residents into low-risk and high-risk populations and compute the measure separately for each group. The relative performance of two facilities is based on comparing the low-risk rates for each facility and then comparing the high-risk rates. One facility may out-perform the other on both groups, just one group or neither group. Note that if the high-risk group measure is not reported, the risk adjustment become an additional exclusion in the definition of the quality indicator. This approach is simple in structure, even though the high-risk classification may involve several factors in a complicated decision tree.

The second common approach to risk adjustment uses regression modeling to compute the expected quality indicator rate given the mix of risk adjustment factors present in the nursing home's resident population. The regression model would be fit periodically to a large aggregation of NH residents, possibly drawn from facilities considered to provide adequate or superior care. The fitted QI formula would then be applied to residents of the report facility with the facility-level expected QI aggregated from these results. The unadjusted QI measure is then compared to the expected (or predicted) QI value. This is usually done by subtracting the expected QI from the unadjusted QI and adding the difference to the average QI for all facilities. This results in a hypothetical estimate of what the QI might be if the facility had an average mix of risk factors.

The regression approach is more challenging to explain and to implement than the prior high-low risk classification method. The regression model must be periodically refit and explained to the audience. This may be complicated, for example, if the signs of the regression coefficients applied to the risk factors are not as expected. This may happen if the risk factors themselves are correlated (i.e., collinear). In this case, it may be prudent to constrain the regression to force the coefficients to have the "proper" sign.

Another technical issue associated with the regression method is assuring the fitted expected QI model behaves in a reasonable fashion for facilities whose risk factor profile is significantly different than the average facility used to fit the model. The fitted model may work well for modest variations in average risk factors, but make some heroic assumptions when extrapolating expected results for outlying facilities. The most extreme action the high-low risk group method can generate is to place an outlying facility entirely in the high-risk (or low-risk) category.

The regression method does provide for a finer breakdown of expected resident outcomes. If the low-risk group in the first method encompasses a wide range of outcome rates, despite have removed the residents at the highest risk, then the regression method may better reflect this variation within each risk grouping. On the other hand, it may be possible to expand the two-category risk grouping to three or four categories, as appropriate. In fact, any instance of the regression method can be closely

approximated by expanding the number of risk categories and using the fitted regression model to determine to which category a resident belongs.

The other obvious difference of this method versus the high-low risk classification method, is that the regression method merges the assessments of low-risk and high-risk group performance. If the observed QI rate is 5% lower then the expected QI rate, we do not know if this is true for both risk levels or whether one group (say, the low-risk group) was 10% below expected while the other group (high-risk) was 5% above expected.

When reviewing the risk adjustment for a candidate measure, it would be appropriate to consider the merits of both risk adjustment mechanisms.

DECISION: _____

E. Credibility (based on volume of data)

As mentioned previously, the credibility of any resident-level outcome measure is less than 100%. All such measures rely on observed outcome rates to estimate unobservable "true" outcome rates for which the provider is accountable, in part. For example, based on the quality of care provided by Nursing Home A and the characteristics of its residents, the true fall rate might be 5% per reporting quarter. The actual fall rate observed could reasonably be zero or 20%, depending on the number of residents. The larger the resident population (sample size), the smaller will be the expected deviation of the observed rate from the true rate. While the observed rate is the best available estimate of the true rate, the audience should be made aware of the likelihood that the true value differs significantly from the observed rate.

Another issue related to the decreased credibility of measures with small denominators arises in the comparison of facility results. A common approach to assessing a facility's measure is to determine its percentile placement among, say, all other facilities in the state. If large and small facilities are co-mingled in setting these percentiles, we will find that small facilities dominate the outer percentiles, simply because their observed outcome rates are more volatile than large facility rates.

Most measurement systems recognize this problem by masking results if they are based on fewer than "n" residents. This approach is simple. It gives, however, the benefit of the doubt (forever) to very small facilities on undesirable outcome measures. It also only modestly addresses the percentile issue.

Another approach is to report confidence intervals for these measures. Large facility values will have narrow confidence intervals, while small facilities will have wide intervals. This, of course complicates the explanation and presentation of the results. It does allow for presentation of all results, even for very small facilities. It is not clear how the confidence intervals should be used to for appropriate percentile rankings.

A third approach is to employ confidence intervals for reporting an individual facility's own results, but to assign percentile rankings only among facilities of a similar size. So, a small facility with an observed outcome rate of 10% might be at the 65%-tile of small facilities. The same rate for a large facility might be at the 90%-tile. This approach adds an additional layer of complication in reporting results. We must also be on guard for differences in the average (or median) outcome rate by facility size. If we blindly group facilities into size groups and assign percentiles, the resulting rankings will be indirectly risk-adjusted for facility size. This should be a conscience decision is designing the system, not an unanticipated by-product of credibility adjustment. If the no size-based risk adjustment is wanted, the outcome distributions for each size grouping might be shifted so that the adjusted medians are all equal before percentiles within each size group are assigned.

An approach that might be used to increase to credibility of small facility results is to use a longer reporting period. This will increase the denominators of the outcome rates and shrink the width of the confidence intervals, but will make the reported results less timely. Also, if the same resident is included both of two quarters that are combined, the two observations cannot be considered independent. If the computation of the confidence interval is not adjusted appropriately, it will be too small. The appropriate adjustment to the confidence interval is not difficult to apply, but will be difficult to explain (if necessary).

A final method that is receiving some attention employs hierarchical modeling or mixed effect modeling. In these approaches, the true facility outcome rate is considered an unobservable random effect at the facility level shared by all residents in the same facility. Best Linear Unbiased Estimates (or the empirical Bayesian equivalent – see Arling, et al) serve as credibility-adjusted estimates of each facility's true outcome rate. In most cases, these estimates can be considered a weighted average of two competing estimates of a facility's true value. The first estimate is that obtained by ignoring other facility results and simply giving full credibility to the observed outcome rate for the facility. The second estimate gives zero credibility to the observed rate for the facility and uses the average outcome rate for all facilities combined. Greater weight is given to the first estimate as the facility's size increases. Under various assumptions, this weight average estimator can be shown to be a more reliable estimator of the true facility outcome rate. Such estimators are sometimes call "shrinkage" estimates, since adjusted rates are the observed rates "shrunken" toward the global mean. The smaller the facility, the greater is the shrinkage. Note that this method again give the benefit of the doubt to small facilities. They are assumed to be average unless the observed result is dramatically different from average. This mix effect regression method can combine both risk-adjustment and credibility-adjustment in one regression step. It is, of course, very complicated to explain and present. It is also subject to the same issues mentioned for the regression risk-adjustment method above. Appropriate assignment of

percentile rankings is quite challenging since, after adjustment, small facility results are less volatile than the results for large facilities. So, it may still be appropriate to assign percentile rankings only within facility size groups.

DECISION: _____

F. Aggregation of measures

Depending upon the intended audience for the reporting system, it may be desirable to present an aggregated performance score. For example, for public reporting, an overall star rating might be useful in narrowing down nursing home selection. In providing performance information to nursing homes to encourage quality improvement efforts, such aggregates may not be needed. In fact, a satisfactory overall score may mask the need to address component care areas needing improvement.

If needed, aggregate measures can range from weighted averages of component measures to counts of care areas with measures surpassing some threshold. The first approach is relatively simple, but requires appropriate weights to be developed or specified by the user. The second approach focuses on areas needing improvement and ignores superior performance in other areas.

There are statistical techniques for reducing the dimensionality of a set of facility measures. Principal components analysis would analyze the measures for a sample of facilities. If each facility has, say, ten measure values, the analysis would find the first two or three linear combinations of measure values that explain most of the variation from facility to facility. From another perspective, if the analysis observes significant correlation among the ten measures, it will suggest a reduced number of combinations from which the observed values can be approximately recreated. This may be of interest to those managing the reporting system, but would be difficult to explain to the primary audience.

DECISION: _____

G. Measure standards

Once a measure is calculated, it is helpful to provide a comparison value to determine whether some action is appropriate. These thresholds or standards can be absolute or relative. Resident-level process measures might have a clinical basis from which an absolute standard can be established. These absolute standards can range for zero tolerance to rates based on prior research with the process. Relative standards might be appropriate for outcomes that are undesirable, but cannot realistically be set at zero. Relative standards might involve first determining the percentile ranking of the facility's measurement among an appropriate facility peer group. The resulting ranking then measures the degree to which the facility has successfully managed the care area.

DECISION: _____

H. Reporting measure trends

After several reporting periods have passed, the need to display historical progressions of measure values should be evaluated. Historical value displays can range from simply providing the current measure values in a tabular format along with prior values to displaying time series plots, possibly highlighting trends on seasonal patterns. Unusual sequences of values could also be flagged for possible investigation. Time series plots could display measure values for the facility and an appropriate peer group, or display percentile rankings over time. Improvement in measures from period to period could become a spin-off measure subject to its own standards or percentile ranking.

The statistical significance of statewide or facility trends can be obtained by incorporating time variables into regression models otherwise used for risk adjustment or credibility adjustment.

DECISION: _____

I. Feedback, correction and refinement of reporting system

If the reporting system is to improve with use, it is essential to include a feedback process. This is especially true regarding the results of follow-up investigations triggered by quality indicators exceeding initial action thresholds. Such feedback might lead to additional measure exclusions or risk adjustment factors. It could simply lead to improved thresholds yielding a better balance of false positives and false negatives. Feedback could also serve to collect approaches to successfully investigate and address problems that are confirmed. Of course, feedback can also guide clarifications in the presentation of reported results and suggest ways that the results might be made more useful to the nursing home providers.

DECISION: _____

VI. Existing Measurement Systems

Existing nursing home performance measurement systems include values currently reported by WI DQA, the CMS Nursing Home Compare system, the CASPER reporting system, quality indicators used in the new QIS survey process, and measures reported by other states. The goals of these systems vary, but they do offer candidate measures that can be included or revised for inclusion in a WI NH clinical performance reporting system.

A. WI DQA Website

Wisconsin DHS DQA already publishes several nursing home measures annually at www.dhs.wisconsin.gov/bqaconsumer/NursingHomes/CIRindex.htm , including:

- Staffing levels per resident, retention levels and turnover rates based on self-reported values in the Annual Staffing Survey (formerly the Annual Survey of Nursing Homes)
- Summaries of deficiency citations during the year

B. CMS Quality Measures

CMS has defined the following 30 quality measures, some of which are reported on Nursing Home Compare (see the "NHC" column in the table below) and some of which are reported on CASPER (see the "CASPER" column in the table below).

Description	Short/Long Stay	NHC	CASPER
Percent of Residents Who Self-Report Moderate to Severe Pain	Short Stay	Y	Y
Percent of Residents With Pressure Ulcers That Are New or Worsened	Short Stay	Y	Y
Percent of Residents Who Were Assessed and Appropriately Given the Seasonal Influenza Vaccine	Short Stay	Y	N
Percent of Residents Who Received the Seasonal Influenza Vaccine	Short Stay	N	N
Percent of Residents Who Were Offered and Declined the Seasonal Influenza Vaccine	Short Stay	N	N
Percent of Residents Who Did Not Receive, Due to Medical Contraindication, the Seasonal Influenza Vaccine	Short Stay	N	N
Percent of Residents Assessed and Appropriately Given the Pneumococcal Vaccine	Short Stay	Y	N
Percent of Residents Who Received the Pneumococcal Vaccine	Short Stay	N	N
Percent of Residents Who Were Offered and Declined the Pneumococcal Vaccine	Short Stay	N	N
Percent of Residents Who Did Not Receive, Due to Medical Contraindication, the Pneumococcal Vaccine	Short Stay	N	N
Percent of Short-Stay Residents Who Newly Received an Antipsychotic Medication	Short Stay	Y	N
Percent of Residents Experiencing One or More Falls with Major Injury	Long Stay	Y	Y
Percent of Residents Who Self-Report Moderate to Severe Pain	Long Stay	Y	Y
Percent of High-Risk Residents With Pressure Ulcers	Long Stay	Y	Y
Percent of Residents Assessed and Appropriately Given the Seasonal Influenza Vaccine	Long Stay	Y	N

Percent of Residents Who Received the Seasonal Influenza Vaccine	Long Stay	N	N
Percent of Residents Who Were Offered and Declined the Seasonal Influenza Vaccine	Long Stay	N	N
Percent of Residents Who Did Not Receive, Due to Medical Contraindication, the Seasonal Influenza Vaccine	Long Stay	N	N
Percent of Residents Assessed and Appropriately Given the Pneumococcal Vaccine	Long Stay	Y	N
Percent of Residents Who Received the Pneumococcal Vaccine	Long Stay	N	N
Percent of Residents Who Were Offered and Declined the Pneumococcal Vaccine	Long Stay	N	N
Percent of Residents Who Did Not Receive, Due to Medical Contraindication, the Pneumococcal Vaccine	Long Stay	N	N
Percent of Residents With a Urinary Tract Infection	Long Stay	Y	Y
Percent of Low Risk Residents Who Lose Control of Their Bowel or Bladder	Long Stay	Y	Y
Percent of Residents Who Have/Had a Catheter Inserted and Left in Their Bladder	Long Stay	Y	Y
Percent of Residents Who Were Physically Restrained	Long Stay	Y	Y
Percent of Residents Whose Need for Help with Activities of Daily Living Has Increased	Long Stay	Y	Y
Percent of Residents Who Lose Too Much Weight	Long Stay	Y	Y
Percent of Residents Who Have Depressive Symptoms	Long Stay	Y	Y
Percent of Long-Stay Residents Who Received An Antipsychotic Medication	Long Stay	Y	N

The technical definitions for these QM's are included in the QM Users Manual at www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/Downloads/MDS-30-QM-Users-Manual-V60.pdf .

C. CMS Nursing Home Compare

The Nursing Home Compare website, www.medicare.gov/NursingHomeCompare , provided public information on nursing home characteristics, staffing, survey results and quality measures. Each of the last three categories is assigned up to five stars and an overall 5-star rating is assigned. The technical user document, www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandComplianc/Downloads/usersguide.pdf , provides details on the measures used and the methodology for assigning the star ratings.

- Health Inspections - Measures based on outcomes from State health inspections: Facility ratings for the health inspection domain are based on the number, scope, and severity of deficiencies identified during the three most recent annual inspection surveys, as well as substantiated findings from the most recent 36 months of complaint investigations. All deficiency findings are weighted by scope and severity. This measure also takes into account the number of revisits required to ensure that deficiencies identified during the health inspection survey have been corrected.

  Points are assigned to each health deficiency based on scope and severity as well as additional points for uncorrected deficiencies on the 2nd, 3rd or 4th revisit. Points from the most recent survey (or most recent 12 months of complaints) are weighted 50%, the prior survey 33%, and the first survey 17%. At least two surveys are required for any star rating to be published. The top 10% (lowest point totals) receive five starts, the middle 70% receive 2-4 stars in three equal groupings, and the worst 20% receive 1 star. While the point percentiles are updated for each state every month, a facility's star ranking is fixed until new deficiency data for that facility is received.

- Staffing - Measures based on nursing home staffing levels: Facility ratings on the staffing domain are based on two measures: 1) RN hours per resident day; and 2) total staffing hours (RN+ LPN+ nurse aide hours) per resident day. Other types of nursing home staff such as clerical, administrative, or housekeeping staff are not included in these staffing numbers. These staffing measures are derived from the CMS CASPER Certification and Survey Provider Enhanced Reports (CASPER) system, and are case-mix adjusted based on the distribution of MDS 3.0 assessments by RUG-III group. (This must use the MDS 3.0/MDS 2.0 crosswalk logic to assign RUG-III classifications using MDS 3.0 assessments.)

  Star ratings for staffing are based only on the case-mix-adjusted RN and total nursing staffing levels per resident day. Cut points are fixed for two-year periods by CMS.

- QMs - Measures based on MDS quality measures (QMs): Facility ratings for the quality measures are based on performance on 9 of the 18 QMs that are currently posted on the Nursing Home Compare web site, and that are based on MDS 3.0 resident assessments.

  The 18 QMs reported are indicated in the CMS QM table above. The nine used in the star rating system include 7 long-stay measures and 2 short-stay measures are as follows:

  Long-Stay Residents:

- Percent of residents whose need for help with activities of daily living has increased
- Percent of high risk residents with pressure sores
- Percent of residents who have/had a catheter inserted and left in their bladder
- Percent of residents who were physically restrained
- Percent of residents with a urinary tract infection
- Percent of residents who self-report moderate to severe pain
- Percent of residents experiencing one or more falls with major injury

Short-stay residents:

- Percent of residents with pressure ulcers (sores) that are new or worsened
- Percent of residents who self-report moderate to severe pain

Each of the nine quality measures is computed for the most recent three calendar quarters (a weighted average of the risk-adjusted quarterly values, weighted by the quarterly denominators). These values are each translated to a percentile ranking based on national results for the last three quarters of 2011, except for the ADL measure which uses state-specific percentiles. The percentile values are summed and the total points are used to assign star rankings.

The overall star rating is found as follows:

Step 1: Start with the health inspection five-star rating.

Step 2: Add one star to the Step 1 result if staffing rating is four or five stars and greater than the health inspection rating; subtract one star if staffing is one star. The overall rating cannot be more than five stars or less than one star.

Step 3: Add one star to the Step 2 result if quality measure rating is five stars; subtract one star if quality measure rating is one star. The overall rating cannot be more than five stars or less than one star.

Step 4: If the Health Inspection rating is one star, then the Overall Quality rating cannot be upgraded by more than one star based on the Staffing and Quality Measure ratings.

Step 5: If the nursing home is a Special Focus Facility (SFF) that has not graduated, the maximum Overall Quality rating is three stars.

D. CMS CASPER QM's

The CASPER reporting system presents a subset of CMS's quality measures (see the CMS QM table above) plus four additional measures not used elsewhere, for use by state surveyors and nursing facility staff.

Short/Long Stay	Quality Measure
Short	Self-Reported Moderate/Severe Pain
Short	New/Worsened Pressure Ulcers
Long	Self-Reported Moderate/Severe Pain
Long	High-Risk Residents with Pressure Ulcers
Long	Physical Restraints
Long	Falls*
Long	Falls with Major Injury
Long	Psychoactive Medication Use in Absence of Psychotic or Related Condition*
Long	Antianxiety/Hypnotic Medication Use*
Long	Behavior Symptoms Affecting Others*
Long	Depressive Symptoms
Long	Urinary Tract Infection
Long	Catheter Inserted and Left in Bladder
Long	Low-Risk Residents Who Lose Bowel/Bladder Control
Long	Excessive Weight Loss
Long	Need for Help with ADLs Has Increased

*Only available on CASPER

E. QIS Survey QCI's

The new nursing home survey process makes use of facility measures based on MDS data and data collected on site. The following table lists these QIS Quality of Care and Quality of Life Indicators (QCLIs). Complete specifications and thresholds for further investigation can be found at www.qtso.com/download/qcli/July_2012_Dictionary_for_Posting.pdf .

QCLI Description	Sample
Abuse	
1 QP205 Abuse (Resident Observation	Census
2 QP236 Abuse (Family Interview	Census
3 QP253 Abuse (Resident Interview	Census
Abuse Prohibition Review	
4 QP205 Abuse Prohibition (Resident Observation	Census
5 QP236 Abuse Prohibition (Family Interview	Census
6 QP253 Abuse Prohibition (Resident Interview	Census
Accidents	
7 QP092 Dangerous Device Use (Resident Observation	Census

8 QP218 Potential Accident Hazards / Bed Side Rails (Resident Observation	Census
9 QP265 Fall and/or Fracture in Last 30 Days (Staff Interview	Census
Activities	
10 QP096 Structured Activities for Cognitively Impaired (Resident Observation	Census
11 QP208 Activities (Resident Interview	Census
12 QP239 Activities (Family Interview	Census
Activities of Daily Living, Cleanliness and Grooming	
ADL	
13 QP017 Incidence of Decline in Late Loss ADLs (Previous & Most Recent (excl.Adm. MDS)	MDS
14 QP027 Dressing Decline Since Admission (Admission & 90-Day MDS	MDS
15 QP028a Dressing Severe Decline (Admission & 90-Day MDS	MDS
16 QP028b Dressing Severe Decline (Previous & Most Recent (excl.Adm. MDS)	MDS
17 QP031 Eating Decline Since Admission (Admission & 90-Day MDS	MDS
18 QP034 Toileting Decline Since Admission (Admission & 90-Day MDS	MDS
19 QP038 Locomotion Decline Since Admission (Admission & 90-Day MDS	MDS
20 QP039a Locomotion Severe Decline (Admission & 90-Day MDS	MDS
21 QP039b Locomotion Severe Decline (Previous & Most Recent (excl.Adm. MDS)	MDS
22 QP238 ADL Assistance (Family Interview	Census
Cleanliness and Grooming	
23 QP074 Dressing [Not Dressed] (Resident Observation/CenRecord/Most Recent MDS	Census
24 QP075 Cleanliness/Grooming/Oral (Resident Observation	Census
25 QP256 Cleanliness/Grooming/Oral (Resident Interview	Census
Admission, Transfer, and Discharge Review	
26 QP183 Admission Process (Family Interview	Census
27 QP250 Exercise of Rights (Resident Interview	Census
28 QP251 Exercise of Rights (Family Interview	Census
Behavioral and Emotional Status	
29 QP043a Increase in Physical Abuse (Admission & 90-Day MDS	MDS
30 QP106a Increase in Rejection of Care (Admission & 90-Day MDS	MDS
31 QP106b Increase in Rejection of Care (Previous & Most Recent (excl.Adm. MDS)	MDS
Choices	
32 QP234 Choices (Resident Interview	Census
33 QP244 Choices (Family Interview	Census
Community Discharge	
34 QP071 Lack of Community Discharge (AdmRecord/Most Recent MDS	Admission
Death	
35 QP059 Death (AdmRecord/Most Recent MDS	Admission
Dental Status and Services	
36 QP216 Oral Health Status (Resident Observation	Census

37 QP217 Oral/Dental Problems (Most Recent Full MDS	MDS
38 QP245 Oral Health Status (Family Interview	Census
39 QP254 Oral Health Status (Resident Interview	Census
Dignity	
40 QP212 Dignity (Resident Interview	Census
41 QP240 Dignity (Family Interview	Census
42 QP266 Dignity (Resident Observation	Census
Environmental Observations	
Family Interview	
43 QP248 Building and Environment (Family Interview	Census
Resident Interview	
44 QP201 Building and Environment (Resident Interview	Census
Resident Room Review	
45 QP140 Resident Care Equipment (Resident Observation	Census
46 QP147 Room Accommodations (Resident Observation	Census
47 QP151 Bedroom Privacy (Resident Observation	Census
48 QP152 Clean Linens Available (Resident Observation	Census
49 QP221 Room Odors (Resident Observation	Census
50 QP222 Room Furnishings (Resident Observation	Census
51 QP223 Lighting Levels (Resident Observation	Census
52 QP224 Comfortable Room Temperatures Maintained (Resident Observation	Census
53 QP225 Comfortable Sound Levels Maintained (Resident Observation	Census
54 QP226 Pest Control (Resident Observation	Census
55 QP228 Electric Cords and Outlets (Resident Observation	Census
56 QP229 Ambulation, Transfer, and Therapy Equipment [Resident Use] (Resident Observation	Census
57 QP230 Bathing Safety Equipment (Resident Observation	Census
58 QP231 Functioning Call System (Resident Observation	Census
Food Quality	
59 QP249 Food Quality [Resident Level] (Resident Interview	Census
Hearing	
60 QP214 Lack of Corrective Action for Auditory Problems (Most Recent MDS	MDS
Hospitalization	
61 QP058 Hospitalization Within 30 Days (AdmRecord	Admission
Hydration	
62 QP015 Prevalence of Dehydration (Most Recent MDS	MDS
63 QP182 Hydration (Resident Observation	Census
64 QP258 Hydration (Resident Interview	Census
Infections (non-UTI related	
65 QP061 Wound Infection (Most Recent MDS	MDS
Notification of Change	
66 QP252 Notification of Change (Family Interview	Census
Nutrition	

67 QP013 Prevalence of Weight Loss (Most Recent MDS	MDS
68 QP081 Significant Weight Loss (CenRecord/Most Recent MDS	Census
69 QP082 Underweight and No Supplements (Staff Interview/CenRecord/Most Recent MDS	Census
70 QP105 Weight Loss Since Admission (AdmRecord/Most Recent MDS	Admission
Pain Recognition and Management	
71 QP129 Pain (Resident Observation	Census
72 QP255 Pain (Resident Interview	Census
Participation in Care Planning	
73 QP210 Participation in Care Planning (Resident Interview	Census
74 QP242 Participation in Care Planning (Family Interview	Census
Personal Funds Review	
75 QP121a Personal Funds (Family Interview	Census
76 QP121b Medicaid Costs (Family Interview	Census
77 QP199 Personal Funds (Resident Interview	Census
Personal Property	
78 QP194 Personal Property (Resident Interview	Census
79 QP241 Personal Property (Family Interview	Census
Physical Restraints	
80 QP022 Prevalence of a Daily Physical Restraint (Most Recent MDS	MDS
81 QP089 Potential Restraints (Resident Observation	Census
82 QP093 Side Rails (Staff Interview	Census
Positioning	
83 QP233 Positioning (Resident Observation	Census
Pressure Ulcers	
84 QP024_H Prevalence of Stage I-IV Pressure Ulcers (High Risk) (Most Recent MDS)	MDS
85 QP024_L Prevalence of Stage I-IV Pressure Ulcers (Low Risk) (Most Recent MDS)	MDS
86 QP049 Presence of Pressure Ulcer (Staff Interview	Census
87 QP050 Presence of Stage 3 or 4 Pressure Ulcer (Staff Interview	Census
88 QP109 Pressure Ulcer Incidence or Worsening (AdmRecord	Admission
89 QP262 Presence of Pressure Ulcer (CenRecord	Census
90 QP263 Presence of Stage 3 or 4 Pressure Ulcer (CenRecord	Census
Privacy	
91 QP204 Privacy (Resident Interview	Census
92 QP243 Privacy (Family Interview	Census
Range of Motion	
93 QP018 Incidence of Decline in Range of Motion (Previous & Most Recent (excl.Adm. MDS)	MDS
94 QP076 Contracture - Presence of (Resident Observation	Census
95 QP077 Contracture Without a Splint Device (Resident Observation	Census
96 QP264 Contracture Without ROM or Splint Device (Staff Interview	Census

Rehabilitation	
97 QP119 Lack of Transferring Rehabilitation Progress (5- & 30-Day MDS	MDS
Skin Conditions (non-pressure related	
98 QP261 Other Skin Conditions (Resident Observation	Census
Social Services	
99 QP246 Interaction With Others (Resident Interview	Census
100 QP247 Interaction With Others (Family Interview	Census
Sufficient Nursing Staff Review	
101 QP232 Sufficient Staff (Resident Interview	Census
102 QP237 Sufficient Staff (Family Interview	Census
Tube Feeding	
103 QP014 QP014 Removed due to April 2012 MDS changes (Most Recent MDS	MDS
104 QP084 QP084 Removed due to April 2012 changes (CenRecord/Most Recent MDS	Census
Urinary Catheter Use	
105 QP010 Prevalence of Indwelling Catheter (Most Recent MDS	MDS
106 QP079 Unjustified Use of a Catheter (Staff Interview	Census
Urinary Incontinence	
107 QP047 Continence Decline Since Admission (Admission & 90-Day MDS	MDS
108 QP260 Presence of Incontinence (Resident Observation	Census
Urinary Tract Infections	
109 QP012 Prevalence of Urinary Tract Infections (Most Recent MDS	MDS
Vision	
110 QP213 Lack of Corrective Action for Visual Problems (Most Recent MDS	MDS

F. NQF NH measures

Many of the CMS quality measures have been reviewed and approved by the National Quality Forum (NQF). The NQF document "National Voluntary Consensus Standards for Nursing Homes: A Consensus Report" (2011) provides interesting commentary on the review process and specific issues related to each of the measures.

G. AHRQ PQI measures

The Prevention Quality Indicators (PQIs) represent hospital admission rates for the following ambulatory care-sensitive conditions in adult populations. "Ambulatory care-sensitive conditions" are conditions for which good outpatient care can potentially prevent the need for hospitalization, or for which early intervention can prevent complications or more severe disease. They are:

- Bacterial pneumonia
- Dehydration
- Urinary tract infections
- Perforated appendix

- Low birth weight
- Angina without procedure
- Congestive heart failure
- Hypertension
- Adult asthma
- Chronic obstructive pulmonary disease
- Uncontrolled diabetes
- Diabetes, short-term complications
- Diabetes, long-term complications
- Lower extremity amputations among patients with diabetes

Many of these PQI's might be redefined to apply to nursing home resident populations. It may also be possible to alter the definitions to focus on preventable ER visits in addition to hospitalizations. These measures will require access to applicable Medicaid and/or Medicare hospital and ER claims and encounter data. The technical specifications for the PQIs can be found at www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec.aspx .

H. Measures used in other states

Arling ("Medicaid Nursing Home Pay for Performance: Where Do We Stand?", Gerontologist, 2009) summarizes key aspects of several state nursing home pay-for-performance systems that include a variety of performance measures. Of particular interest are the quality indicators used in Minnesota, which are more heavily risk adjusted than their CMS counterparts. Ohio has a relatively new system in place.

1. Minnesota NH Quality Indicators

MDS 3.0-based quality indicators used in Minnesota's NH scorecard system include the following:

- Worsening Resident Behavior Problems
- Prevalence of Physical Restraints
- Worsening Bowel Continence
- Worsening Bladder Continence
- Prevalence of Indwelling Catheters
- Prevalence of Urinary Tract Infection
- Prevalence of Infections
- Prevalence of Residents with Unexplained Weight Loss
- Prevalence of New Pressure Sores
- Incidence of Cured Pressure Sores
- Prevalence of Antipsychotics w/o a Psychosis Dx
- Improved Ability to Function
- Increased Need for ADL Help

- Walking as Well or Better than on Previous Assessment
- Worsening Ability to Move Around Room

Technical specifications can be found at www.dhs.state.mn.us/main/idcplg?IdcService=GET_DYNAMIC_CONVERSION&RevisionSelectionMethod=LatestReleased&dDocName=id_051946 . The documentation provided lists the risk adjustment factors used for each of these QIs. We have requested additional detail on how the risk adjustment is implemented.

2. Ohio NH Quality Incentives

Ohio recently implemented a new NH scorecard system that relies heavily on self-reported data. The process, criteria and selected measures are documented at www.healthtransformation.ohio.gov/LinkClick.aspx?fileticket=UDuPraAa4No%3d&tabid=124 .

3. Other states

Additional states cited as having NH performance measurement systems include Colorado, Georgia, Iowa, Kansas, Oklahoma, Rhode Island, Utah, Maryland, Texas, Indiana, Virginia and Massachusetts

VII. Possible Additional Measures

A. Actual-to-Expected Resident Outcomes

Additional candidate clinical outcome measures might be derived by comparing actual changes in the health or long term care status of residents to expected levels based on resident risk factors. Areas that might be measured in this manner include:

- Mortality
- Improvement or deterioration in resident functional/cognitive/behavioral status
- Medical status (measured by, say, chronic conditions)
- RUG classification
- Discharge to community
- Adverse events

B. Care Area Assessment Process Measures

As mentioned previously, resident-level clinical process measures could be constructed around the MDS 3.0 CAA triggers. The denominators (number of triggered CAA's during the reporting

period) could be driven by MDS data, while the numerators (number of CAA's successfully investigated) would likely need to be self-reported.

C. Drug Quality Indicators

Finally, with access to Medicare Part D data, we could consider reinstating the nursing home drug quality indicator report. This last version of this report (prior to the advent of Medicare Part D) included the following drug quality indicators:

Domain 1: Psychotropic Drug Utilization

- 1.1 Residents without psychotic or related diagnosis who are receiving antipsychotic drugs.
- 1.2 Residents receiving hypnotic drugs more than twice in the week of the most recent assessment.
- 1.3 Residents without a diagnosis of Cerebral Palsy, Multiple Sclerosis or Spinal Cord Injury receiving benzodiazepines with a long half-life.
- 1.4 Residents receiving anti-anxiety/hypnotic drugs
- 1.5 Residents with a diagnosis of depression not receiving an antidepressant
- 1.6 Residents receiving amitriptyline, doxepin or imipramine

Domain 2: Cardiovascular Drug Therapy

- 2.1 Residents with a diagnosis of myocardial infarction and without a co-morbidity diagnosis (e.g. Insulin dependent diabetes, asthma, heart block >1, left ventricular dysfunction, COPD) not receiving a beta blocker (e.g. propranolol).
- 2.2 Residents with a diagnosis of congestive heart failure not receiving an ACE Inhibitor
- 2.3 Residents with diagnosis of atrial fibrillation not receiving warfarin

Domain 3: GI Drug Therapy

- 3.1 Residents receiving histamine-2 antagonists (e.g. Zantac, Pepcid) or Proton Pump Inhibitors (e.g. Prilosec) for at least two consecutive assessments.
- 3.2 Residents with a fecal impaction

Domain 4: Infection Control

- 4.1 Residents receiving anti-infectives and/or antibiotics
- 4.2 Residents with urinary tract infections
- 4.3 Residents with antibiotic resistant infections
- 4.4 Residents with clostridium difficile infection

Domain 5: Pain Management

- 5.1 Residents receiving propoxyphene
- 5.2 Residents receiving NSAIDS (e.g. ibuprofen, Vioxx)
- 5.3 Residents receiving indomethacin or phenylbutazone

5.5 Residents with horrible or excruciating pain without opioids.

5.6 Residents with pain

Domain 6: Other Drug Issues

6.1 Residents receiving 9 or more medications during most recent assessment

VIII. Conclusion

The purpose of this document is to outline areas for which input is needed from stakeholders (measure selection criteria, thoughts on measurement issues) and to offer some initial suggestions for candidate quality measures. As we meet with DLTC, DQA and the stakeholders, we will add their ideas and concerns to this document.