

The Minimum Data Set (MDS): A Primer for Data Users

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Modern health care systems produce an abundance of data. The information is generated in the course of planning for and delivering health care. Some of the data are made available, according to privacy rules, to other providers, regulators, payers, scholars, patients, and the general public to support a variety of goals, including:

- reporting to the public;
- benchmarking;
- setting reimbursement rates;
- measuring clinical acuity;
- measuring quality outcomes; and
- identifying sources of risk and opportunities for improvement.

A major source of information about health care in nursing homes, and about the residents served there, is a standardized resident assessment instrument known as the Minimum Data Set (MDS). MDS has the potential to be a powerful research tool. But it must be used wisely, with a clear understanding of its strengths and weaknesses, and of how to make defensible inferences from it. The goal of this paper is to highlight features of MDS that data users must keep in mind as they are using this dataset. In particular, we will address issues in four domains:

1. Data continuity and assessment cycles
2. Determining total and average length of stay
3. Measures of quality
4. Reliability and integrity of the data

We have chosen to focus on these domains, as they may be areas that interested parties such as researchers, state agencies, CMS, and so on might explore using MDS as a key data source. However, as this paper reveals these are also areas that have a high potential to give erroneous data as MDS was not necessarily designed to provide such information.

Introduction to MDS

Medicare- and Medicaid-certified nursing homes, along with certain swing bed providers, must administer a resident assessment instrument (RAI) known as the Minimum Data Set (MDS). MDS has twenty primary sections (each one with multiple subsections) that capture information on

demographics; a range of functional and medical information relevant to quality measures, and patient acuity; and items answered by residents themselves (specifically, in Section Q, which asks whether the resident wishes to return to the community). An individual's plan of care is driven in large part by the information in MDS. Information for the MDS is collected from an interdisciplinary team of professionals consisting of a nurse, attending physician, and – as appropriate to the individual—social worker, therapeutic recreation specialist, nutrition specialist, direct care staff, skilled therapists (physical, occupational, and speech) and the resident (and, if appropriate, his or her representative). Completion of MDS is managed by MDS Coordinator, who is typically a registered nurse.

MDS Version 3.0 was launched in October 2010. MDS 3.0 was designed to improve the accuracy, reliability, and usefulness of the instrument compared to the previous Version 2.0. Studies by the RAND Corporation prior to release of Version 3.0 have shown that the latest version has resulted in improved resident input, improved accuracy and reliability, increased efficiency, more valid items, and the direct inclusion of resident input.¹

One of the changes made in MDS 3.0 of particular interest to the PASRR Technical Assistance Center (PTAC) was to introduce items that ask whether individuals have a mental disability as defined by the Preadmission Screening and Resident Review (PASRR) program-- specifically, a serious mental illness (MI), or an intellectual disability (ID) or related condition (RC). Question A1500 asks whether an individual has been found by PASRR to have one of these disabilities; question A1510, added in early 2012, asks the assessor to identify which disability an individual has. The introduction of A1510 allows data users to track the rates at which individuals with MI, ID, or RC are “detected” (or identified) by state PASRR programs, and to compare those rates with other diagnostic items in MDS.

MDS is administered shortly after admission, and at regular intervals thereafter, including quarterly, annually, and after a significant change in condition. In addition to this schedule there is a separate schedule for individuals who are receiving “skilled services,” when the provider is being reimbursed by Medicare Part A (Medicare A) during the assessment period.

MDS is electronically submitted to CMS only after each staff person providing information has signed off, and after a registered nurse has signed the entire assessment, stating that the information is true and correct to the best of his or her knowledge. Because MDS is considered a legal and binding document, and because it has real consequences for residents and the care they receive, its integrity is paramount. Inaccuracies in the data can trigger deficiencies, fines, and sanctions, including civil or criminal prosecution with charges of insurance fraud (Medicare, Medicaid, and private pay). The accuracy of MDS is examined by state survey agencies, which survey Medicaid- and Medicare-certified nursing homes every 9 to 15 months. If inaccuracies are found, providers are cited for being non-

¹ Saliba, D., & Buchanan, J. (2008). Development & Validation of a Revised Nursing Home Assessment Tool: MDS 3.0. Santa Monica, CA: RAND Corporation. Retrieved July 25, 2015 from <http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/downloads/MDS30FinalReport.pdf>

compliant with the relevant federal “tag,” or F-tag. F-tag 272, which derives from 42 CFR 483.20(b)(1)(xviii), (g), and (h), requires that:

- (1) The assessment accurately reflects the resident’s status;
- (2) A registered nurse conducts or coordinates each assessment with the appropriate participation of health professionals; and
- (3) The assessment process includes direct observation, as well as communications with the resident and direct care staff on all shifts.

Within those federal requirements, nursing homes determine:

- Who should participate;
- How the assessment process is completed; and
- How the assessment information is documented

In order to monitor nursing home compliance with MDS requirements, CMS conducted a pilot study involving 125 nursing homes (described below under Internal and External Validity). As a result of the study, CMS has mandated that, beginning in 2015, each state will conduct an “MDS Focus Survey” on a random sampling of nursing homes. This survey is outside the standard recertification survey and is conducted by the state survey agency. If MDS Focus Survey uncovers inaccuracies that result in deficiencies, the deficiencies will be considered a complaint investigation, and the violations must be corrected by the provider.

Despite the importance of MDS information and the requirements intended to assure its accuracy, there are, as with most complex datasets, limitations and known issues that users must keep in mind. Detailed academic literature has been published using MDS as the core data source – for example, on the distortions introduced when MDS was first used to calculate reimbursements. Academic users may need to keep different issues in mind; this paper is not intended to comment on the way academic researchers analyze MDS or interpret their findings. As noted earlier, this paper will explore four practical areas important for quality assurance, government oversight, and other non-academic users of MDS data: data continuity and assessment cycles; determining the total and average length of stay; measures of quality; and reliability and integrity of data.

Data Continuity and MDS Assessment Cycles

A state agency may wish to access MDS tool to determine if a client that receives PASRR Level II services are due to the client having MI, ID, or RC. It is important for the analyst to have an understanding that there are numerous assessment cycles within MDS process, as not all cycles address this question. To answer this question the researcher can look at the Admission, Annual, or Significant Change MDS Assessment cycles and the questions within questions A1500 or A1510. However, other cycles such as the PPS sub-set Assessments, Quarterly Assessments and all of the others do not contain those questions. There are multiple cycles of MDS assessments. Assessment cycles are determined by requirements put in place by the Nursing Home Reform Act of the Omnibus Budget Reconciliation Act

(OBRA) of 1987. These requirements apply to all residents of Medicare- or Medicaid-certified nursing homes, regardless of the resident's insurance type.

Within the OBRA cycle, the following assessments must be completed

- Admission
- Quarterly
- Annual
- Significant Change in Status Assessment
- Significant Correction to Prior Comprehensive Assessment (as needed)
- Significant Correction to Prior Quarterly Assessment (as needed)

There is also a schedule known as the PPS Assessment cycle specifically for individuals receiving skilled services under Medicare A, a Medicare Advantage plan, or under any commercial insurance plan that follows the Medicare A reimbursement guidelines. The PPS-related assessments must be completed at 5 days, 14 days, 30 days, 60, and 90 days. The content of the PPS assessments comes from the same questions found within MDS Assessment; the only difference is the schedule on which the assessments are completed. The PPS Assessment is a subset of MDS assessment and is only delineated for purposes of reimbursement (see conditions noted above). The PPS MDS assessment cycle serves to establish the reimbursement rate to the provider. Medicare A has 52 reimbursement rates driven by the level of care that the individual requires. In some states, the Medicaid nursing facility reimbursement is also calculated using MDS acuity information.

Quarterly MDS reports are not tied to reimbursement. Even though no rigorous studies have confirmed that an MDS that is tied to reimbursement is more accurate than one that is not, findings from audits do substantiate this notion. If the information is not going to impact payment, nursing homes may have a tendency to complete the assessment less comprehensively. This raises the possibility that some facilities make very few changes in residents' quarterly assessments, quarter after quarter. While it is quite possible that some individuals in nursing homes remain at a stable acuity, it is important to distinguish between stable acuity quarter over quarter and the accuracy of the assessment to reflect changes in condition. The new MDS-focused regulatory compliance survey was implemented across the country in 2015 and there is now significant oversight for accuracy of all MDS data, including quarterly assessments. This oversight will result in a deficiency being cited if inaccuracies are found and will require a plan for correction and systemic change to ensure sustained compliance. A cited deficiency carries a lot of weight and is a significant "tool" to shape behavior so that minimal compliance is achieved and sustained. Since many Medicaid residents reside in nursing homes for extended periods, the accuracy of these quarterly assessments is a compliance issue for states and CMS.

Using MDS to Determine Total and Average Length of Stay

A state agency may be interested in the total (or average) length of stay for individuals identified by PASRR Level II for purposes ranging from calculating the cost of care to performing studies of demographics. On the surface it would be reasonable to use MDS to address questions about "date of

admission” and “date of discharge” to make this determination. However, each time a person enters a nursing home – whether for the first time or for the tenth – they are given a new entry date. If the readmission MDS results in the nursing home following the PPS MDS cycle, there are no consequences for the provider beyond the increased frequency of MDS processing. (On average, each MDS assessment requires between 5 to 15 hours of labor depending on which assessment is being completed.) Tracking the original date of admission separately would create an administrative burden on nursing home staff, since the original date of admission must be tracked separately. This makes it difficult to accurately determine total length of stay. At the very least, it is not advisable to simply subtract an MDS entry date from the date on which a nursing home census is taken. This method will frequently underestimate total length of stay in a nursing home, especially for individuals who cycle in and out of nursing homes frequently (e.g., because they need periodic acute care in a hospital or other non-nursing home settings such as Home and Community Based Services, Assisted Living Residences, etc.). Several events can trigger a new date of admission. These are described below.

Events That Trigger a New Date of Admission

Events that trigger a new date of admission include:

- Any time a “discharge assessment, return not anticipated” assessment is completed
- 30-day absences
- A change of ownership (under certain circumstances)
- Resident transfers
- Hospitalizations

Discharge, Return Not Anticipated

When an MDS discharge assessment is completed the provider must also indicate whether “return is anticipated” or “return is not anticipated.” If the provider indicates that return is *not* anticipated, it is assumed that this stay is complete. If the individual returns to the nursing home, even though return was not anticipated, a new admission assessment must be completed. This holds true regardless of how brief the interval of time may be between the discharge and new admission date. This most commonly occurs when an individual is discharged from a nursing home to a lower level of care, only to find that they still need care in a nursing home.

Return Anticipated, up to 30-Day Absences

If an individual is discharged from the nursing home on a formal “leave of absence” status with “return anticipated” and returns within 30 days, a new assessment is not required. But if the individual is away for more than 30 days, a new admission assessment must be completed. When the nursing home completes a new admission assessment, the total length of stay count will be impacted, as a new “day 1” will be established without recognizing previous length(s) of stay.

Change of Ownership

When a nursing home has a change of ownership, and the receiving owner does not assume the assets and liabilities of the previous owner, the seller must complete “discharge assessment- return not anticipated” forms for all current residents. The new owner must then complete an admission

assessment for each resident, thus restarting the length of stay at day 1. If the new owner *does* incur the assets and liabilities of the previous owner, MDS assessment cycle will transcend the change of ownership and will continue along the same timeline; no additional assessments specific to the change of ownership need to be completed.

Resident Transfers

When an individual transfers from one nursing home to another, a new admission assessment must be completed. This new admission assessment will result in the date of admission being reset to day 1. This reset can happen en masse if a nursing home closes and all residents are transferred to a nursing home owned by another provider.

Disasters

Where there has been a disaster such as a fire, earthquake, or tornado, and it is determined that the resident will not return to the evacuating nursing home, an assessment of “discharge - return not anticipated” must be completed, and the receiving nursing home must complete a new admission assessment. This results in a new length of stay, with day 1 being the first day in the receiving nursing home, regardless of the date on which it was determined that the return would be unlikely.

Hospitalizations

A discharge assessment must be completed whenever an individual is admitted to an acute care setting. If return to the nursing home is anticipated, and occurs within 30 days, the hospitalization is considered a transfer and a new admission assessment is not required (although a significant change in status could be needed). Whether the individual is admitted to the hospital or kept under “observation status,” makes no difference. However, if readmission occurs after 30 days of being discharged to an acute care hospital, or occurs at any time if unanticipated, a new admission assessment must be completed. Whenever a “discharge, return not anticipated” assessment is completed and the individual does actually return to the nursing home then the complete new admission assessment cycle will have to be administered. The new admission assessment will impact the nursing home length of stay, as a new day 1 will be established.

Calculating Total Length of Stay

It is clear from the discussion above that MDS cannot straightforwardly be used to calculate the total length of stay for nursing home residents. Simply put, MDS does not total the number of days in each respective nursing home; there are too many events that trigger a new admission assessment, and, therefore, a new length of stay. This issue is especially problematic for research questions focused on the total days of nursing home care.

There is a solution to this problem, which requires states to customize MDS. Section S of MDS has been left unscripted by CMS; states can use this section to capture state-specific data. Section S could be used to ask providers to total the number of days an individual has spent in nursing homes during their lifetime. This would, however, require states to impose a requirement on facilities that could be seen as burdensome, and the data collected as a result may not be entirely trustworthy – for example, if a facility has imperfect knowledge about an individual’s lifetime stay, or if facilities attempt to

approximate the total length of stay merely as a way to fulfill the requirement. While it is possible to make these calculations, they are not always straightforward, and state staff often lack the necessary in-house expertise.

MDS and Quality Measures - Minimal Accommodation for Person Centered Care Risk Adjustment

As Value-Based Purchasing becomes more important in determining the best care for the cost, researchers may wish to compare clinical outcomes in nursing homes to those in community-based settings. A primary goal of MDS 3.0 is to characterize the quality of care that nursing home residents receive. MDS defines Quality Measures as

“Information derived from MDS data that provides a numeric value to quality indicators. These data are available to the public as part of the Nursing Home Quality Initiative and are intended to provide objective measures for consumers to make informed decisions about the quality of care in nursing homes.” (from *CMS’s Resident Assessment Instrument User’s Manual for Version 3.0, 2010, Appendix A: Glossary and Common Acronyms*)

From MDS 3.0 there are a total of 17 quality measures, 3 for short-term stays (100 days or less), and 14 for long-term stay (more than 100 days). To differentiate between short-term stays and long-term stays, the best practice is to use the most current admission date as reflected on the current MDS, and count the days forward by midnights to determine the so-called “100 day divide.”

Quality Measures Generated by MDS 3.0

Short Term Stay Measures	Long Term Stay Measures
New/Worse Pressure Ulcer	Hi-risk Pressure Ulcer
Antipsychotic Medication	Physical restraints
Mod/Severe Pain	Falls
	Falls with Major Injury
	Antipsychotic Medication
	Antianxiety/Hypnotic
	Behavioral symptoms affect Others
	Depression symptoms
	Urinary Tract Infection
	Catheter Insert/Left Bladder
	Low-Risk Lose Bowel/Bladder Incontinence
	Excessive Weight Loss
	Increased Activities Daily Life Help
	Mod/ Severe Pain

Although MDS data provide a basis for characterizing quality of care, there are some concerns about the degree to which data in MDS fully capture quality. Specifically, MDS does not adequately account for risks driven by resident preferences – especially among residents with comorbid conditions. An individual’s desires may contradict evidence-based medicine and result in suboptimal clinical outcomes that MDS does not adjust for. Because providers receive intense scrutiny around quality measures, some nursing homes may refuse to admit certain individuals out of fear that their overall quality ratings might

suffer. Because MDS does not fully permit risk adjustment, data users may draw erroneous conclusions about the quality of care a provider supplies.

MDS 3.0 permits limited risk adjustment in two ways. One approach involves excluding residents whose outcomes are not under the nursing home's control, such as when the quality indicator is present on admission to the nursing home, or when a certain outcome is truly unavoidable, such as when a resident is comatose.

The second approach to risk adjustment involves adjusting quality measures (QMs) directly, using logistic regression. This method of adjustment employs resident-level covariates that are found to increase the risk of an outcome, following three steps:

1. Resident-level covariates are used in a logistic regression model to calculate a resident-level QM score.
2. An average of all resident-level expected QM scores for the nursing home is calculated to create a facility-level expected QM score.
3. The final facility-level QM score is based on a calculation which combines the facility-level *expected* score and the facility-level *observed* score.

Only three of the QMs are adjusted using resident level covariates for public reporting:

1. Percent of residents with pressure ulcers that are new or worsened (short-stay measure only)
2. Percent of residents who self-report moderate to severe pain (long-stay measure only)
3. Percent of residents who will have/had a catheter inserted and left in their bladder (long-stay measure only)

The remaining 14 QMs are not adjusted using resident-level covariates. For these measures, facility-level QM scores are reported.

Where MDS 3.0 risk adjustment process falls short is in recognizing a shift in standards of care towards allowing residents to exercise self-determination, and other considerations that are out of the provider's control. Over the years, many nursing homes have migrated away from the traditional medical model to a person-centered care model that is now widely accepted.

The medical model was very top-down in its structure, with the physician controlling the plan of care and staff implementing care *for* the resident rather than *with* the resident. While this culture of care does lend itself to evidence-based medicine, it did not take into consideration what residents wanted for their lives and from healthcare. If residents did not follow the medical regimen, they were labeled "non-compliant" and seen as "bad patients." The system of facility requirements and measures of quality were constructed under the medical model. While MDS 3.0 reflects a commitment to evidence-based care, it has not kept up with the new and improved way of providing nursing home care and services.

A movement known as "culture change" based on person-centered care changes that paradigm, from one in which the physician and staff are at the top and the resident is at the bottom, to a culture in which the resident is at the center of all decisions and the plan of care. Person centered care can include

instances when the wishes of the resident or the resident's surrogate decision maker are honored but may be in conflict with evidence-based medicine. When this situation presents itself, the provider will educate the resident on what may happen clinically should they wish to create a plan of care that is not aligned with maximizing their clinical outcomes, and then the resident can choose the path he or she wishes to follow.

As an illustration of the difficult position in which providers can find themselves, consider the following scenario in which the facility was attempting to put what they saw as a resident's needs and preferences first, but a legitimate surrogate decision-maker demanded a plan of care that affected an outcome:

A 91-year-old resident in a nursing home has some cognitive decline and a diagnosis of major depressive disorder that impacts her daily life: She has withdrawn from social events, has a decreased appetite, wishes to stay in bed most of the day, does not welcome visitors, and does not wish to have basic care provisions such as bathing, oral hygiene, and dressing in clothing other than the night gown provided to her. The interdisciplinary care team at the nursing home has taken the time to really get to know her and the activities and food that she particularly enjoys. As a result, the staff have established a schedule to read the newspaper to her daily and reminisce about the ranch that she grew up on, as these are the two things that she enjoys most, and the staff members have reported that she actually interacts and smiles when these two subjects are engaged. The staff have also discovered that her favorite thing to eat is a scrambled egg sandwich, which is provided to her at every meal per her request. As a result, she has several things to look forward to each day, including reading the newspaper, talking about the ranch and having scrambled egg sandwiches. This has resulted in weight gain, reversing the trend of weight loss that she had been experiencing.

However, her family, including her daughter, who is the medical power of attorney, feels that the only way to reverse her major depression is to give her medication. The Power of Attorney has approached the interdisciplinary care team with the strong request that her mother be given Zyprexa, an antipsychotic medication sometimes used to treat major depressive disorders. The staff members felt that the side effects of Zyprexa outweigh the benefits for this resident, and let the Power of Attorney know as much. The staff further noted that, with the introduction of the interventions of the daily newspaper, talking about how she grew up, and providing the food that she enjoys, the clinical indicators are taking a positive turn, and her mother is experiencing more overall enjoyment, all without the side effects of an antipsychotic medication. The POA continued to pursue the usage of the medication and contacted the resident's physician, who ultimately ordered the Zyprexa to satisfy the POA. This in turn resulted in the facility being penalized for prescribing an antipsychotic medication.

This example shows how, even with person-centered care, the choice, in this case by the resident representative, created an unnecessary outcome, with a poor impact on the QM of antipsychotic medications. This is problematic for data users, as the database does not indicate that the trigger was based on a request from the POA, and does not reflect the nursing home's attempts to avoid antipsychotics. This example shows how the inability to risk-adjust MDS 3.0 for person-centered care

can create false impressions about quality in nursing homes and lead to erroneous conclusions about quality.

Reliability

For MDS to be a useful research tool, it must have good inter-rater reliability. MDS must accurately reflect the resident's status as of the Assessment Reference Date (42 CFR 483.20(g), nursing tag F278) in order to

- Develop an appropriate plan of care
- Produce Quality Measures that adequately reflect resident care
- Generate appropriate reimbursement
- Avoid the appearance of fraud or abuse

A number of studies have evaluated the inter-rater reliability of those conducting an MDS. In their study of MDS 2.0, Mor et al. (2003) found adequate to good levels of inter-rater reliability, but noted that a minority of facilities had poor levels of inter-rater reliability.² With the implementation of MDS 3.0 in 2010, this concern has largely been addressed; however, it is worth noting that nursing homes that experience high turnover rates among MDS coordinators, direct caregivers, or nursing administrators may have lower inter-rater reliability, as MDS – like any instrument – has an associated learning curve. With the increased number of nursing homes that have recently implemented an Electronic Health Record (EHR), it will be interesting to look for studies that explore whether having an EHR results in improved accuracy in MDS Data. Nursing homes that have effectively implemented an EHR have reported improved accuracy in MDS data.

Internal and External Validity

In some cases, sections of MDS may contradict one another. For example, responses to rehabilitation questions may lead one to believe that the resident no longer requires skilled care, while other responses show that the resident may be either clinically complex or have special needs. The point is that it may be valuable for investigators to externally validate some of the key responses with multiple MDS questions before a conclusion is established.

A method that can be used to externally validate MDS is checking it against the resident's medical record or other medical documentation such as the continuity of care document. A pilot study commissioned by CMS in 2014 evaluated adherence to MDS 3.0 reporting requirements, including the requirements to have an RN conduct or coordinate the assessments and to adhere to timelines (CMS S&C 15-25- NH).³ The study also examined concordance levels between MDS and resident medical records. In those instances where medical records did not match MDS, interviews and observations of the residents were conducted. The results of this study indicated high levels of compliance with RN and

² Mor, V., Angelelli, J., Jones, R., Roy, J., Moore, T., & Morris, J. (2003). Inter-rater reliability of nursing home quality indicators in the U.S. *BMC Health Services Research*, 3(1), 20. Retrieved July 26, 2015 from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC280691/pdf/1472-6963-3-20.pdf>.

³ Retrieved July 26, 2015 from <http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/Survey-and-Cert-Letter-15-25.pdf>.

timing requirements, but discrepancies between MDS and medical records in four of seven clinical conditions:

1. Severity of injury associated with falls
2. Pressure ulcer status
3. Use of restraints
4. Late loss activities of daily living (ADL) status

The results of the pilot should not be generalized to all nursing homes in the U.S., since the sample of nursing homes included in the pilot was not statistically representative of the nation's nursing homes. The pilot included 125 nursing homes in the states of Minnesota, Maryland, Virginia, Pennsylvania, and Illinois. Further, participation was voluntary, and the State Survey Agency had some discretion in picking the sample. CMS staff accompanied the survey team and provided technical assistance and assurance that the survey protocol was followed. Even though these findings should be interpreted with caution, they demonstrate that some amount of validation may be necessary with MDS. The findings from this pilot study have prompted CMS to facilitate nationwide "MDS Focus Surveys" across the nation starting in 2015.

Conclusions

MDS 3.0 improves upon earlier versions in many ways, and it provides a powerful tool for measuring and improving quality, research, and so on. However, there are still limitations that data users must be aware of. This paper addressed four areas that MDS is commonly used for by researchers and identified areas to be mindful of.

Data Continuity and the OBRA and Medicare PPS Cycles

When using MDS, one must remember that there are six OBRA and four PPS MDS assessments and data capturing cycles, and that the nature of the data depend on which MDS cycle report is being examined. Data users should become familiar with the nuances of each cycle so they are certain to examine the cycle that is most appropriate for the question(s) they wish to answer.

Total and Average Length of Stay

Due to the many events that can trigger the completion of a new MDS, thus establishing a new admission date, it is difficult to use MDS to capture the total number of days that an individual has received care and services in a specific nursing home, much less in their lifetime. It can be done, but it requires sophisticated analytic methods to identify the same individual (sometimes when a transfer has happened across states), decide what constitutes a single "episode of care" in a nursing home (versus distinct episodes separated by short periods of time), and tally up the total number of days spend in the nursing home. Users may need to use a different source for these data. This may prove to be difficult; indeed, the difficulty of capturing this information may be why MDS does not already capture it. While length-of-stay data can be captured through insurance providers such as state Medicaid, Medicare, and commercial Insurance, there is no way to track length of stay when individuals use non-insurance means, such as cash, to pay for nursing home stays. MDS does have a section (section "S") that is not

scripted by CMS, and is left as an open field to allow states to enter state-specific data. Perhaps states will see the value in using Section S to track total nursing home days. Until then, MDS cannot be used to reliably capture such information without additional complex analyses.

Quality Measures and Risk Adjustment for Honoring Personal Preferences

Using MDS as a tool to assess the composite quality measures of a provider should be done with caution. If, for example, an investigator uses the percentage of residents that have experienced urinary tract infections based on the QM score, he or she may conclude that a nursing home with a high percentage of UTIs must not provide high-quality services. If it did, the reasoning might go, the facility would do a better job with hydration, cross contamination, and hand washing, and it would not have such a high incidence of UTIs. But this conclusion might be unwarranted. UTIs can develop in facilities that favor person-centered models of care, if, for example, some individuals exercise their choice not to have staff members assist them with proper hygiene, due to concerns about privacy and dignity.

Reliability and Integrity of MDS Data

It is possible for the information that is ultimately reported on MDS to be invalid due to inaccurate data entry. This problem has wide-ranging consequences, as MDS is used for public reporting measures, plans of care, and reimbursement. In 2015, CMS implemented a new regulatory survey process that will scrutinize the accuracy of MDS and will carry the weight of deficiencies up to civil monetary penalties if inaccuracies are detected. The data user must keep in mind that much of the assessment process is driven by human beings with wide-ranging skills. Data users may benefit from cross-validating information in MDS, at least on a sample basis. This can be accomplished by comparing MDS to other tools such as the clinical record, staff interviews, and observation techniques.