



Rural-Relevant Quality Measures for Testing of Statistical Approaches to Address Low Case-Volume

SUMMARY OF RECOMMENDATIONS – DRAFT FOR COMMENT

July 10, 2020

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Background

Low case-volume poses a measurement challenge for many healthcare providers in rural areas. Low population density, in combination with limited access to care, can reduce the number of patients eligible for inclusion in healthcare quality measures in Medicare public reporting and value-based purchasing programs. These low sample sizes affect the reliability and validity of measure scores, making it difficult to compare performance between providers or track changes in quality over time.

NQF convened the multistakeholder Measure Applications Partnership (MAP) Rural Health Workgroup (“Workgroup”), which included clinicians and healthcare providers, state and local agency staff, healthcare consumers, representatives of private nonprofit organizations, and other experts with background in rural or tribal areas, to help identify performance measures that are high impact and meaningful to rural Americans, feasible for providers to report to Medicare programs, and resistant to low case-volume challenges. The resulting Core Set of Rural-Relevant Measures (“Core Set”) was released in the report of this work published in August 2018. The Core Set included both cross-cutting measures and condition-specific measures pertinent to rural populations, including measures on mental health, substance abuse, medication reconciliation, diabetes, hypertension, chronic obstructive pulmonary disease (COPD), hospital readmissions, perinatal care, and pediatric care. During public commenting, stakeholders commented that six of the measures in the Core Set may face low case-volume challenges in some areas ([read full report here](#)).

To further advance measurement science related to case-volume, in 2018, Centers for Medicare & Medicaid Services (CMS) tasked NQF with eliciting expert input on promising statistical approaches that could be used to address the low case-volume challenge. NQF convened a Technical Expert Panel (TEP) which made four recommendations: “borrow strength” for low case-volume rural providers by incorporating additional data (e.g., from past performance, other providers, other measures); recognize the need for robust statistical expertise and computational power to implement “borrowing strength”; report exceedance probabilities, which reflect the uncertainty of measure scores; and actively anticipate the potential for unintended consequences of measurement. The TEP also made recommendations for future activities, including testing the “borrowing strength” approach through activities such as simulation studies or challenge grants ([read full report here](#)).

In fall 2019, building upon previous efforts, NQF was tasked with identifying a list of high-priority, rural-relevant measures susceptible to low case-volume challenges for future testing of the TEP’s recommended statistical approaches. To accomplish this objective, NQF performed an environmental scan and convened several web meetings of the Workgroup to develop a priority measure list and discuss reporting challenges specific to measurement in rural areas.

Process

Building on recommendations from the Workgroup and the TEP, NQF completed an [environmental scan](#) of approximately 250 rural-relevant quality measures included in Medicare quality reporting and value-based purchasing programs that are advised upon by MAP. NQF also included measures used in select Center for Medicare & Medicaid Innovation (CMMI) Alternative Payment Models (APMs). These included the Oncology Care Model, Bundled Payments for Care Improvement Advanced, Next Generation ACO Model, and Comprehensive Primary Care Plus. Quality measures used in these models

were considered for inclusion based on the models' high profile and experience in using quality measurement to incentivize delivery of high-quality care and efficient use of healthcare resources.

Measures were deemed rural relevant if they addressed topics [previously identified as rural relevant](#) by the Workgroup or [defined as rural relevant in published literature](#). NQF extracted measures using the Centers for Medicare & Medicaid Services Measures Inventory Tool (CMIT). CMIT filters such as conditions, sub-conditions, Meaningful Measure area, current status, as well as key word searches, were used to identify measures that relate to rural-relevant topics and are implemented or finalized in federal programs. The environmental scan included measure titles, reference numbers, NQF endorsement, measure types, measure specifications, risk adjustment data, minimum case requirements, and rural-relevant topics addressed for each included measure. Data not included in CMIT, like program-specific minimum case numbers and risk adjustment factors, were collected manually from program resources, technical manuals, NQF measure repository notes, and other sources.

After developing the initial list of measures, NQF discussed the environmental scan methodology and initial results with the Workgroup during a web meeting on May 6, 2020. The Workgroup provided initial input on important measure attributes and topics to consider during measure prioritization.

NQF then fielded a brief survey with the Workgroup asking members to rate the importance of different measure attributes and to select high priority topic areas that build on the current Core Set. The Workgroup recommended the following topics and attributes be prioritized to identify measures that would be suitable candidates for the statistical testing.

Topics prioritized:

1. Access to care
2. Vaccinations
3. Cancer screening
4. Stroke
5. Healthcare-associated infections (HAIs)
6. Emergency department use

The Workgroup prioritized access to care noting that it is the most relevant issue for rural health and healthcare and remains an important measurement gap area. Vaccinations and cancer screening were considered important aspects of preventive care that may not be received by rural residents in a timely manner due to access issues. Stroke was emphasized as an important issue for rural residents due to comparatively higher mortality rates. Infections such as catheter-associated urinary tract infections and hospital-onset *Clostridium difficile* infection were noted as important threats to patient safety that are addressed by existing quality measures and programs but that rural hospitals are not subject to these programs and can have challenges reporting on the measures due to low case-volume. Emergency department use was considered an important topic, and, in particular, communication around patient transfers; measures on admit-to-discharge time were considered not as relevant in rural contexts. Also identified as important were the topics of end-of-life/advance directives, pneumonia, heart failure, surgical care, heart attack, asthma, and obesity.

Measure attributes used for prioritization:

1. NQF endorsement

2. Outcome measures, especially Patient-Reported Outcome-Based Performance Measures (PRO-PMs)
3. Cross-cutting measures
4. Measures used in multiple federal programs

Rationale for each measure attribute were that NQF endorsement indicates scientific acceptability of measure properties, feasibility, usability, and evidence of a performance gap. Outcome measures and PRO-PMs assess the impact of a healthcare service or intervention on health status or experience of a patient and emphasize patient-centeredness. Cross-cutting measures reflect broad applicability to patient populations by not limiting measurement to a specific diagnosis or process. And use in multiple programs could mean greater ability of rural providers to participate in federal programs if the statistical approaches were found to be successful.

NQF used the Workgroup's importance ratings for each attribute to develop a composite score that was assigned to each measure in the environmental scan. The Workgroup's importance rating was based on averaged Likert scale responses to each attribute (0=not important; 1=slightly important; 2=moderately important; 3=important; 4=very important). NQF staff then tagged each measure with a "1" or "0" to indicate whether or not the measure was NQF-endorsed, an outcome or PRO-PM, cross-cutting, or used in multiple federal programs. Staff then multiplied each attribute 1 or 0 by the importance rating to obtain the composite score for each measure. NQF then grouped measures into high-priority rural-relevant topic areas and selected high-scoring measures within each group for further consideration. In selecting measures for consideration, NQF attempted to ensure an adequate mix of measure type, risk adjustment, use in programs, care settings, and reporting levels. This resulted in a short list of approximately 40 measures. The shortlist also included six measures from the Core Set; stakeholders shared during previous public comment that these measures may pose measurement challenges due to low case-volume. The shortlist was then shared with the Workgroup to offer an opportunity for members to recommend removal or addition of specific measures. The Workgroup recommended removal of four measures addressing coronary bypass artery graft procedures and one measure addressing overuse of bone scan for staging low-risk prostate cancer patients. The Workgroup decided to consider #0500 *Severe Sepsis and Septic Shock* and #0277 *PQI-08 Heart Failure Admission Rate*.

During extended web meetings on May 27 and May 29, 2020, the Workgroup had in-depth discussions on 34 measures. Individual Workgroup members were randomly assigned as lead discussants and were asked to provide initial reactions to five questions:

1. Is the measure problematic due to low case-volume and why?
2. Is the measure pertinent to the rural population and does it have a significant impact on patient care?
3. Does the hospital/clinician have influence over measure performance?
4. What is the opportunity for performance improvement?
5. Is the measure feasible to report for rural providers?

NQF staff and Workgroup co-chairs facilitated group discussion on each measure and, following discussion, Workgroup members voted to recommend or not recommend measures for statistical testing. Measures that received a "yes" vote by 60% or more made it to the final recommendations list.

Measure Recommendations

The Workgroup selected 15 measures susceptible to low case-volume and recommended they be prioritized for future testing of statistical approaches to overcome this challenge. This measure list puts forth recommendations for prioritizing which measures should be tested. It is not intended to represent the Workgroup's opinion of the measures' appropriateness for use in specific federal programs, nor are these measures being considered for addition to the Core Set at this time. The 15 measures are listed below along with their rationale for inclusion and reporting challenges and are described in further detail in an Excel spreadsheet available online on the [MAP Rural Health project page](#).

CMIT #	NQF #	Measure Title	Rationale for Inclusion	Reporting Challenges
2517	0005	Consumer Assessment of Healthcare Providers & Systems (CAHPS) Clinician/ Group Survey	This measure is currently included in the Core Set but public comments suggest that the similar Hospital CAHPS (HCAHPS) measure is challenging to report on due to low case-volumes in rural areas. The Workgroup agreed that the clinician has influence over measure performance and that this measure is pertinent to rural populations and impacts care.	The Workgroup noted that feasibility of data collection is a problem for Critical Access Hospitals (CAHs) due to cost and reporting rules that are difficult for rural providers to meet. Limiting allowable data collection to either mail-in surveys or via telephone creates undue administrative burden and is one reason this measure is challenging to report on in rural settings. The Workgroup recommends that CMS consider allowing electronic data collection. Despite these challenges, this survey is used widely in different programs and it would be helpful to apply the statistical testing approaches to this measure to assess reliability.
113	0166	HCAHPS	This measure is currently included in the Core Set but public comments suggest that it is challenging to report on due to low case-volumes in rural areas. Public comments suggest that nearly 60% of CAHs submitting HCAHPS data do not meet the CMS Star Rating threshold of 100 completed surveys over 4 quarters, and 12% of reporting CAHs had fewer than 25 surveys returned. The Workgroup noted that this measure is rural relevant, impacts care, and is influenced by clinicians.	The Workgroup cited the same reporting challenges for this measure that are outlined for #0005 (above). It was noted that CAHPS and HCAHPS have similar data collection processes, and if resources are limited HCAHPS should be prioritized for statistical testing.
2046	2079	HIV Medical Visit Frequency	The Workgroup agreed that this measure faces reporting challenges due	Measure performance may be impacted by factors

CMIT #	NQF #	Measure Title	Rationale for Inclusion	Reporting Challenges
			to low case-volume, is pertinent to a rural population, and has a significant impact on patient care. The measure was noted as important from a health equity perspective, as African American patients are disproportionately represented among rural HIV cases. The Workgroup also noted that this measure addresses access to care, a critically important issue for rural health, and that the current Core Set does not include any HIV measures.	outside of a clinician's control, such as lack of transportation options for rural patients with HIV. The Workgroup recommends that "medical visit" include a telehealth option. The Workgroup noted that this measure is endorsed by NQF at the facility level, but that it is analyzed in the Merit-Based Incentive Payment System (MIPS) at the clinician level.
2519	0108	Follow-Up Care for Children Prescribed Attention-Deficit/Hyperactivity Disorder (ADHD) Medication (ADD-CH)	The Workgroup noted that this measure does not face low case-volume challenges at the health plan level, as endorsed by NQF, but that it does at the group practice/clinician level, as it is used in MIPS reporting. The measure was considered pertinent to rural populations and impactful, especially given the implications for mental health and substance use later in life. The Workgroup noted that MIPS data demonstrate an opportunity for performance improvement. While the Workgroup voted to recommend this measure for statistical testing, there was uncertainty around including it in the Core Set in the future, as there may be more broadly applicable behavioral health measures that could be prioritized.	It was noted that clinicians have some influence on measure performance by initiating follow-up, but that the actual number of visits might depend on patient-level factors.
745	0576	Follow-Up After Hospitalization for Mental Illness	The Workgroup discussed that the measure would not have low case-volume problems at the health plan level, as endorsed by NQF, but likely faces low case-volume reporting challenges at the clinician level, as used in MIPS. The measure was considered rural relevant and impactful; feasible for clinicians to report from existing claims data; and has opportunity for improvement. Because this measure includes patients starting at the age of six years, it does address pediatric health.	A shortage of behavioral health specialists in rural areas creates a challenge in ensuring timely follow-up for behavioral health appointments.

CMIT #	NQF #	Measure Title	Rationale for Inclusion	Reporting Challenges
2818	0275	Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate (PQ105-AD)	The Workgroup noted that the measure was rural relevant and impactful, the clinician would have influence over the measure performance (especially in team-based care), there was opportunity for improvement, and the measure would likely be feasible to report as it is claims-based. There was some uncertainty around whether this measure truly faces low case-volume reporting challenges, but the Workgroup consensus was that it may face these challenges at the group/practice level.	The Workgroup recommends that this measure be tested at the group/practice level, rather than at the population level.
1364	0138	National Healthcare Safety Network (NHSN) Catheter-Associated Urinary Tract Infection Outcome Measure	This measure is currently included in the Core Set, but public comments suggest that it is challenging to report on due to low case-volume in rural areas. Public comments suggest that it is vital for CAHs to be reporting healthcare-associated infection data to the National Healthcare Safety Network, but that very few CAHs have enough cases for a quality metric of a standardized infection ratio to be calculated on a quarterly or even annual basis. The Workgroup noted that this measure is a high priority for rural populations, feasible to report, has opportunity for performance improvement, and that measure performance is under a clinician's influence as there are clear guidelines for using catheters appropriately.	The Workgroup recommends that in analysis and testing, the final product should provide guidance on whether differences in infections between individual facilities can be determined given low case-volumes in the rural setting.
831	1717	National Healthcare Safety Network (NHSN) Facility-wide Inpatient Hospital-onset <i>Clostridium difficile</i> Infection (CDI) Outcome Measure	This measure is currently included in the Core Set, but public comments suggest that it is challenging to report on due to low case-volumes in rural areas. The Workgroup agreed that this measure encompassed important topics, including environmental hygiene, infection and prevention control policies, and antibiotic stewardship.	Previous public comments suggest that it is vitally important for CAHs to be reporting healthcare-associated infection data to the NHSN but that very few CAHs have enough cases for a quality metric of a standardized infection ratio to be calculated on a quarterly or annual basis.
2831	0471	PC-02 Cesarean Birth	This measure is currently included in the Core Set, but public comments suggest that it is challenging to report on due to low case-volume in rural areas. The Workgroup discussed that this measure	N/A

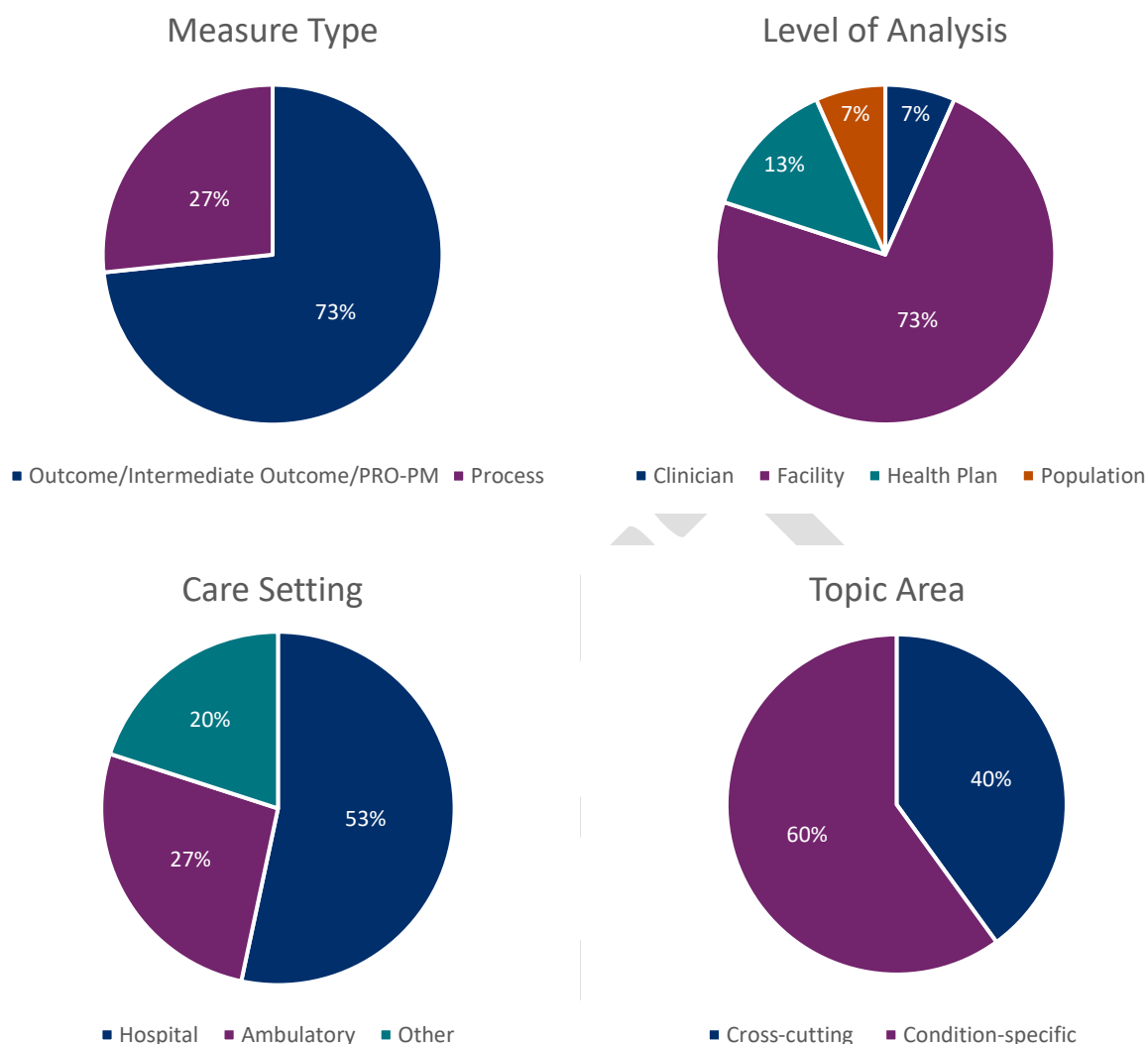
CMIT #	NQF #	Measure Title	Rationale for Inclusion	Reporting Challenges
			was rural relevant, demonstrated an opportunity for improvement due to uneven performance, could be influenced by the clinician, and was feasible to report because of the option to pull data from electronic health records. The group also noted that the measure was risk-adjusted but did not include adjustment based on the type of provider performing the C-section, and also had a number of exclusions (e.g., it is only for first-time mothers who are not transferred to another facility for care, medical exclusions also apply).	
182	0173	Emergency Department Use without Hospitalization During the First 60 days of Home Health	The Workgroup agreed that this measure was important for care, could be influenced by the clinician, demonstrated room for improvement, and was feasible to report. It is also related to home health—a setting not captured by other measures on the list.	N/A
6040	1789	Risk-Standardized, All Condition Readmission	This measure is currently included in the Core Set, but public comments suggest that it is challenging to report on due to low case-volumes in rural areas. The Workgroup agreed that there is room for performance improvement and that this measure is feasible to report on as it is based on claims data. It was noted that this measure is endorsed at both the Accountable Care Organization (ACO) and facility levels, and that at the facility level, it is likely challenging to report due to low case-volume.	The Workgroup recommends this measure be tested at the facility level.
2432	2510	Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)	The Workgroup discussed that this measure is subject to low case-volume reporting challenges and is feasible to report on as it is claims-based and reported at the nursing facility level.	The Workgroup expressed uncertainty that a clinician would have significant influence over measure performance, which may be explored during testing.
899	1551	Hospital-Level 30 Day, All-Cause, Risk-Standardized Re admission Rate (RSRR) Following Elective Primary Total Hip Arthroplasty	The Workgroup expressed that this measure is susceptible to low case-volume reporting challenges, is pertinent and impactful to an aging rural population, and is feasible to report as it is already used for reporting through Hospital Compare and can be influenced by clinicians.	This is a useful benchmark that has been used without adjustment, but one or two additional readmissions can greatly impact performance for some facilities. It was also noted that CMS publicly reports this information, but it is very hard to use it to

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		(THA) and/or Total Knee Arthroplasty (TKA)		distinguish between facilities as the numerator is so low and most hospitals report a rate of zero for this measure.
2086	2539	Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy (OP32)	The Workgroup stated that clinicians have some influence over this measure and that it is feasible to report. It was noted that colonoscopies are procedures that bring patients into the healthcare system and serve as an access point for care, and patients express that they do not want to travel to receive colonoscopies, rendering this measure impactful and rural relevant.	N/A
1017	0500	Severe Sepsis and Septic Shock: Management Bundle	The Workgroup agreed that this measure was subject to low case-volume reporting issues in the rural context. The measure would be a high-value inclusion for improving care for a mix of provider types and noted that this will be added to the Medicare Beneficiary Quality Improvement Project (MBQIP) as a measure for CAHs.	Small rural facilities may transfer patients with sepsis to larger facilities to finish treatment. The question was raised as to whether a smaller part of the composite might be appropriate to measure for small rural hospitals. Some rural hospitals do treat sepsis in full. For those that do not, the measure could be used to address whether care was managed correctly up to the point of transfer.

To differentiate this measure list from the Core Set of Rural-Relevant Measures created in 2018, measures included in the Core Set are intended to be widely implementable and resistant to low case-volume challenges. Measures on this list are required to be susceptible to low case-volume challenges that may limit their usefulness for making performance comparisons or driving quality improvement for rural providers. Note this measure list includes several measures in the Core Set due to public comments suggesting they may face low-case volume challenges.

Measure List Characteristics

The Workgroup emphasized the importance of achieving an adequate mix of measure attributes and topic areas in the final list of recommended measures for testing of the statistical approaches. Several aspects of the measures that were deemed important to vary included measure type, level of analysis, care setting, and cross-cutting versus condition-specific topic area. These attributes were considered when making decisions about which measures to include in the final list. Characteristics of these 15 measures are highlighted below.



Note that some measures included on this list are analyzed at varying levels and likely do not face low case-volume challenges at the health plan or population level. For these measures, the Workgroup recommends applying statistical testing at a more granular level to assess appropriateness of use at, for example, the clinician or facility level of analysis. If the statistical testing approaches are successful and appropriate contextual factors are considered during testing, measures that were once only appropriate for reporting at higher levels of analysis (e.g., health plan or population) may be suitable to assess performance at other levels of analysis. The Workgroup encouraged this to be carefully investigated during statistical testing.

Reporting Challenges

Several themes emerged from the Workgroup's discussion on reporting challenges.

Data Challenges

Some measures discussed did not seem to have case-volume challenges based on the denominator population. However, certain rural providers can still face difficulties obtaining the data needed to meet measure requirements or to inform care decisions. Data challenges include lack of sufficient information flow from specialists to primary care providers, between providers in rural and urban areas, and/or between providers and other entities (e.g., payers).

Measure Reporting Options

The Workgroup appreciated the movement towards greater use of electronic clinical quality measures (eCQMs) to reduce burden but highlighted several considerations related to their use by rural providers.

- Differing availability of certain data sources (e.g., access to electronic health record (EHR) data) in rural care settings
- Lack of clarity regarding how many CAHs, as well as other rural hospitals, are reporting (and using) eCQMs
- Rural providers are less likely to be using one of the major EHR companies and are usually using smaller, less expensive, and less advanced EHR systems
- Rural providers are less likely to have in-house expertise to perform data extraction and analysis
- Rural providers are more likely to be independent and not part of a larger system, which may negatively impact their performance on measures relying on inter-provider data communication
- The Workgroup recommended that the CAHPS measures should have electronic data collection options

Measure Alignment

Measures related to hospital or emergency department visits after certain procedures should be aligned to the extent possible. For example, measures used to address the quality of surgical procedures should be aligned across ambulatory surgical centers and outpatient facilities.

Unintended Consequences Related to Statistical Testing

Pooling data over several years for one provider would affect the ability to track improvement over time due to lag, which might pose a challenge for pay-for-performance programs intended to serve this purpose. Measure attribution should be carefully considered during testing. For example, physician assistants and nurse practitioners may be the actual providers of care in many cases; however, services are required to be submitted under the supervising physician. Post testing, implementation of measures that rely on statistical methods to address case-volume challenges should carefully consider program characteristics and intent. Additionally, it is crucial to monitor unintended consequences to ensure that measures used to assess care provided in rural areas do not reduce access to care, disincentivize providers from offering certain types of care in rural or underserved areas based on risk of reduced payment, or encourage providers to avoid providing procedures like caesarean sections—even when in the best interest of individual patients.

Gaps and Future Considerations for Rural Health Measurement

The Workgroup identified the following gap areas related to quality measurement in rural areas.

Person-Centered Measurement

The Workgroup encouraged the balance of using quantitative measures that are easier to capture with measures that use qualitative methodologies to represent patient and caregiver voices and experiences (e.g., patient-reported information).

Measures Related to COVID-19 and Telehealth

The healthcare system is continually evolving, even more so recently with major changes in the delivery of care due to the COVID-19 pandemic. The measurement enterprise should consider the impact of

these changes and of the consolidation and regionalization of healthcare. COVID-19 has also exacerbated barriers to health equity and the role of social determinants of health. It is important to recognize these disparities for rural communities and other underserved populations. Infection prevention, health system preparedness, patient resilience, and health system resilience are areas in need of greater data and opportunities for advancing measurement. In addition, due to a rapid increase in the use of telehealth to provide more services, measure specifications should consider and include this technology when appropriate. However, there is also a need to better understand limitations of services that are delivered virtually and if there are differences in the quality of care delivered virtually versus in-person, especially for chronic illness care. There may also be concerns about telehealth access issues for rural communities (e.g., lack of access to high-speed internet).

Community and Population Health

Community-based measures (e.g., those that assess systems of care across a community), keeping populations healthy, and correlating access to care with population health outcomes are areas that are currently not adequately addressed by quality measurement. There are challenges for rural providers in communicating quality information across care settings. The Workgroup suggested that better information flow and communication between providers, payers, and community-based human service agencies could drive greater coordination of patient care and improved patient outcomes. There is also an opportunity for greater coordination among health plans, health systems, and community-based organizations to drive sustainable improvements in care. To fully capture the healthcare areas most important to patients in rural communities, it was suggested that it may be helpful to supplement the Core Set with population-based measures that could assess characteristics that may be difficult to assess at the provider or facility level (e.g., social, economic, and environmental determinants of health, community-level indicators of health and disease, prevention programs).

Conclusion

The Workgroup used a multistakeholder, consensus-based process to select 15 rural-relevant measures that should be prioritized for testing statistical approaches to address low case-volume. These measures cover a range of topics relevant to healthcare quality for rural populations—patient experience, access to care, behavioral health, COPD, HAIs, perinatal care, readmissions, transitions of care, and sepsis. They represent a mix of measure types, analysis levels, and care settings.

Although CMS is the primary audience for the recommendations in this report, other healthcare measurement stakeholders can benefit from understanding the opportunities to advance quality measurement in rural settings. The creation of this prioritized list is an important step towards achieving high quality and high value outcomes for all Americans, regardless if their area of residence is rural or geographically remote.

This work serves as the basis for advancing approaches that can make performance measurement more useful for providers and patients in rural areas as well as other stakeholders that have rural members. Future related work of the Workgroup may include reviewing the statistical testing results for these measures and determining if the measures are appropriate for inclusion in the Core Set of Rural-Relevant Measures.