

**Final Report:**

# Measurement of Interoperable Electronic Health Care Records Utilization



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# Table of Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>2</b>
<b>2</b>	<b>Approach to Interoperability Measurement.....</b>	<b>7</b>
2.1	Overview of Measure Development Process.....	7
2.2	Measurement Stacks.....	8
2.3	Method for quantitative measures.....	10
2.4	Method for survey measures.....	13
2.5	Measurement Scope .....	14
2.6	Network Analysis Considerations .....	15
2.7	Person-Centric Measure Implications.....	16
<b>3</b>	<b>Survey Measures.....</b>	<b>17</b>
3.1	Survey Measure: Adjustments .....	17
3.2	Survey Measure: Additions .....	18
<b>4</b>	<b>Quantitative Measure Sets.....</b>	<b>19</b>
4.1	Behavioral Health Measure Set .....	19
4.2	Care Planning and Management Measure Set .....	23
4.3	Social Services Measure Set.....	26
4.4	Patient Generated Health Data (PGHD) Measure Set .....	29
<b>5</b>	<b>Discussion and Next Steps.....</b>	<b>33</b>
5.1	Barriers and Lessons Learned .....	33
5.2	Next Steps and Other Considerations.....	35
<b>6</b>	<b>Appendices: Measure Specifications .....</b>	<b>39</b>
6.1	Survey Measure: Adjustments .....	39
6.2	Survey Measure: Refinements .....	48
6.3	Behavioral Health Measure Set .....	51
6.4	Care Planning and Management Measure Set .....	63
6.5	Social Services Measure Set.....	74
6.6	Patient Generated Health Data Measure Set .....	84
6.7	Abbreviations .....	90
6.8	References .....	91

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# 1 Executive Summary

## Goals and Objectives

With the goal to advance the measurement of exchanged health information use, the Office of the Assistant Secretary for Planning and Evaluation (ASPE) engaged Clinovations Government + Health (CGH) to explore interoperability<sup>1</sup> between users of certified technologies<sup>2</sup> and trading partners (TPs) not covered by the Centers for Medicare & Medicaid (CMS) Electronic Health Record (EHR) Incentive Program, or Meaningful Use (MU). While the measurement of interoperability is still in the early stages, to date it has largely focused on the use of certified technology and the percentage of information exchanged. There is little insight on how often clinically relevant information is incorporated into a patient’s medical record, whether it assists with clinical decision making, and whether it is of benefit to the provider and/or the patient. This report defines the use of exchanged health information as the use of patient health information from a separate entity, personal health device, or person, to benefit patient care.



### The Objective

To develop methods to measure the progress of interoperable data sharing and use between users of certified technologies eligible for MU incentives and non-incentivized TPs using non-certified technologies.

The objective of this project was to develop methods to measure the degree of interoperability as a result of data sharing and use between users of certified technologies who are eligible for MU incentives and non-incentivized TPs using non-certified technologies. Given the early and evolving technology stage for many TPs, there is a key window of opportunity to develop and implement measurement methods that capture interoperability trends as they accelerate, identify best practices in sharing information, and promote policies that support innovative exchange. Expanding the scope of interoperability measurement is critical as efforts are being made to enable health IT and exchange capabilities beyond the focus of the CMS EHR Incentive Program. Effective patient care will need interoperable access to data generated by providers who were not incented by Meaningful Use.


<sup>1</sup>The ability of systems to exchange and use electronic health information from other systems without special effort on the part of the user, as defined by the Institute of Electrical and Electronics Engineers

<sup>2</sup>Health information technologies (IT) certified by the ONC Health IT Certification Program


To develop measures of interoperability, CGH, ASPE and its collaborators from the Office of the National Coordinator for Health Information Technology (ONC) evaluated and prioritized a set of high priority TPs ineligible for MU incentives. TPs were selected based on criteria, including: TPs’ current level of technical readiness; the value of information exchange for the TPs; inclusion in the ONC’s *Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap*. Coverage by the Health Insurance Portability and Accountability Act (HIPAA) was also examined, but was not used in determining final TP selection. Following further knowledge gained during a literature review and discussions with domain experts, Behavioral Health, Social Services, Care Planning and Management, and Patient Generated Health Data (PGHD)<sup>3</sup>/Mobile Health were selected as candidate TPs for this project.

## Approach

### The Two Phases of the Project



**PHASE 1:** The research and compilation of the current state of interoperability and interoperability measurement for the selected TPs into a Memorandum of Findings (MOF).



**PHASE 2:** The development of measure specifications and estimates of their respective feasibility.

The project was composed of two phases: (1) the research and compilation of the current state of interoperability and interoperability measurement for the selected TPs into a Memorandum of Findings (MOF) and (2) the development of measure specifications and estimates of their respective feasibility.

In the first phase of the project, an environmental scan was conducted for the selected TPs, consisting of a review of literature on TPs’ rates of health IT adoption and existing and emerging exchange capabilities. A Technical Expert Panel (TEP) was convened with the charge to provide input on the MOF at the conclusion of Phase 1 and the proposed measurement framework, potential measures, and the resulting measure specifications for this project at the conclusion of Phase 2. TEP members with TP domain, interoperability, quality measurement and standards expertise included payers, academia and consumers/patient representatives.

In the second phase of the project, following the TEP’s feedback on the potential measures and measure design strategy, six measure sets were drafted: two qualitative survey measures and four quantitative measures. The measure specifications and feasibility protocols underwent review and refinement by ASPE, ONC, and the TEP.

## Measure Development

When it was technically feasible to quantitatively measure message exchange, a set of measurements that follow the bidirectional exchange of information from a sending provider to a receiving provider and back again for a given clinical event were developed. These measures quantify messages as they are initiated by a referring provider and are then received and acted on by a trading partner. These sets of measures are designed to establish the set of providers who are in interoperable communication with one another, determine the frequency of the communications, and further determine how often an initial

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<sup>3</sup> Health-related data created, recorded, or gathered by or from patients (or family members of other caregivers) to help address a health data concern, including, but not limited to: health history, treatment history, biometric data, symptoms, and lifestyle choices, as defined by ONC

event from a sending provider results in a follow up communication from a receiving provider to the message initiator. While this approach does not directly determine if the information in the exchange is used and/or improves the patient's outcome, it does have the benefit of allowing these events to be clustered in a patient-specific manner, thus enabling the formation of a provider network view of communications for any given patient.

Additional and adjustments to existing national surveys that examine bi-directional exchange between provider types (not covered by Meaningful Use) with meaningful users are suggested to capture if exchanged information is used in clinical decision-making.

The final measures in this report are compiled in Appendices 6.1 – 6.6 and listed below:

- **Survey Measure:** Adjustments
- **Survey Measure:** Additions
- **Quantitative Measure for Behavioral Health TPs:** Change in Condition following Electronic Information Exchange
- **Quantitative Measure for Care Planning & Management TPs:** Electronic Information Exchange for Patients with Multiple Conditions
- **Quantitative Measure for Social Services TPs:** Electronic Information Exchange for Patients with Referral to Social Services Trading Partners
- **Quantitative Measure for PGHD TPs:** Electronic Information Exchange for Patients with a Clinician-Monitored Condition

The quantitative measures are presented as a “set.” Each measure within a set may be considered independently for implementation. When calculated sequentially on the same population of patients, the calculation produces patients for whom the entire “loop” of information exchange occurs. This report discusses how the measure sets may be rolled up for a network analysis that illustrates levels of exchange occurring at a population level, while pairing this measurement approach with qualitative survey measures for a complete and accurate picture of the state of interoperability.

The measure specifications are intentionally drafted with flexibility and adaptability in mind for TPs' nascent technology standards and interoperability workflows. Overall for the TPs studied in this report, the rates of technology adoption and use lags behind those of providers incentivized by the MU Program. It is important to acknowledge that TPs' adoption lags behind those who are eligible for financial incentives. Advancing the measure sets for further specification and implementation will contribute to the overall understanding of technology barriers and exchange trends, as well as highlight where best practices and successful exchange patterns may help accelerate adoption, exchange, and use. If information does not flow, it is critical to identify the barriers and what resources are required to lower or remove them.

To advance this project's measures and analysis, this report provides suggestions for further discovery:

- Quantitative measure alpha testing to:
  - a) identify areas where standards are required in technology developed for TPs;
  - b) enhance the measure specifications with additional granularity (e.g., value sets); and
  - c) submit the data concepts, transmission methods between certified and non-certified technology measures, feasibility and level of measurement to additional scrutiny, such that they continue development and be implemented.
- Survey enhancement using the suggested additions and adjustments in order to complement quantitative measures of exchanged health information use.
- A long-term interoperability measurement strategy that utilizes ancillary data sources, including claims data to map the network of providers who share patients and develop patient-centered measures.
- Policies to advance measures that embrace trading partners using certified and non-certified technologies.



## Conclusions

Since the CMS EHR Incentive Program began, there has been substantial progress in the adoption of electronic health care records among provider populations eligible for incentive payments. However, measurement of interoperability is still in the early stages. Measurement is focused on providers eligible for the CMS EHR Incentive Program, and is based upon national survey or attestation data which is self-reported. Expanding the scope of interoperability measurement beyond these settings is critical as efforts are being made to enable health IT and exchange capabilities of settings that are beyond the focus of the CMS EHR Incentive Program. Effective patient care will need interoperable access to data generated by providers who were not incented by Meaningful Use.

Using a mixed method approach that incorporates both quantitative and qualitative measures to examine interoperability will be critical. Quantitative measures (e.g. counting messages between providers and calculating provider and patient communication networks) are valuable as they can establish the extent to which communication occurs between providers and patients. These measures can determine if the volume of information increases overtime and if so, if the network of providers and patients also expands. Developing measures that can be reported through EHRs or other systems that minimize reporting burden will also enable more accurate and widespread reporting of interoperability. Quantitative measures of transactions paired with qualitative measures (e.g. surveys) can determine whether the information exchanged was useful, if it was acted on to improve patient care, and if it increased patient satisfaction and ultimately improved outcomes.

When dealing with the large set of providers who do not qualify for the Meaningful Use Program, and for whom claims data may not exist, measurement methods encounter a broader set of technical capabilities and frequent use of “work around solutions” such as portals and HIE platforms. In addition to issues involved in the technical (quantitative) measurement of interoperability, measurement must ultimately determine if the information exchanged is useful and likely to improve patient outcomes. This goal may require the continued use of surveys, especially if they can be targeted to provider sets that are high (or low) adopters of interoperable technology and share patients. Opportunities for further research include:

- 1) Patient-centric approach to measurement that leverages national data sources (e.g., claims, aggregated data sets) are needed.
- 2) Measurement strategies are needed that consider the entire care team, not just MU/MIPS/APM eligible providers, and consider care partners not captured in claims data.
- 3) Measurements can serve different goals, which need to be specified. Multiple measures are needed to tell an effective “story” that use standards, share information between care teams and competing providers.
- 4) Measures that support network-centric views of of patient/provider interactions can be achieved from analysis of send/receive measures that are feasible today.
- 5) Surveys instruments that can offer insights into utility of information and impact to decision-making and outcomes are needed.
- 6) Interoperability measurement requires both short-term and long-term studies. Multi-year population analysis is needed to attribute impact of information exchange to outcomes.
- 7) The correlation between provider quality and interoperability requires further study to understand optimal communication and potential unintended consequences.

Finally, the ability to achieve and measure interoperability across a wide range of providers will require improvements in both standards and clinical workflows across the healthcare endeavor. An improved understanding of when the exchange of information was of value, including when messaging on a specific clinical issue should terminate would be of great value in placing the measurement of interoperability in context.

## Research Considerations

An effective interoperability measurement strategy inclusive of all members of the care team (e.g., Meaningful Use Eligible Professionals, Trading Partners) should consider:

- Measurement strategies that are extended to include providers who were not incentivized by the Meaningful Use Program. The measurement strategy must consider the range of technical sophistication present in various provider groups, and the pathways by which market forces may try to meet their needs (e.g. EHR vendors may provide portal services to social service providers to enable information exchange), or measures should be agnostic to the technological solutions that are adopted to assure provider communication.
- Clear identification of the measure goal is needed. For example, is the goal to determine if the use of a specific standard (e.g. LOINC) is spreading, or is it intended to determine if providers are sharing more data with social service providers nationally, or is it intended to demonstrate increased sharing of information between competing health providers?
- Multiple measures are needed to provide useful insight into interoperability and information exchange. A combination of multiple measures of information exchange, use, outcome, and flow can provide a more comprehensive picture of exchange.
  - Rolling up simple measures of information exchange to support the construction of provider/patient networks that facilitate both provider and patient centric network views.
  - Surveys and technical measurements (e.g. counting network traffic) are complementary to one another.
- Measures that attempt to link increased interoperability with improved outcomes must consider the broad range of sets of clinical conditions that occur in the healthcare system and the fact that even for prevalent diseases it takes years of population data to attribute an outcome to an intervention.
- The use of interoperability measurements to access provider quality should be delayed until a greater understanding of optimal clinical communications practice has been achieved. More communication is not necessarily better communication and can easily result in unintended consequences.



## 2 Approach to Interoperability Measurement

### 2.1 Overview of Measure Development Process

#### The Goal

To develop methods to measure the progress of interoperable data sharing and use between users of certified technologies eligible for MU incentives and non-incentivized TPs using non-certified technologies.

The goal of this project was to develop methods to measure the progress of interoperable data sharing and use between users of certified technologies eligible for Meaningful Use (MU) incentives and non-incentivized Trading Partners (TPs) using non-certified technologies. To achieve this goal, the project team developed a measurement framework, which was reviewed at the first TEP meeting. With the TEP feedback, an iterative process launched to brainstorm, draft, and refine individual quantitative measure sets for each of the four TPs. Once final measure topics were designated, the project team drafted each TP measure set and submitted them to several rounds of refinement. Following the second TEP meeting, feedback was taken into consideration and the measures were again assessed and further refined. Section 2.3 – Method for Quantitative Measures explains the method used to develop the final four quantitative measures.

Following the first TEP meeting, it was clear that the subjective nature of exchanged health information use required critical questions be addressed. For example, “What information is important to send and receive? How is received information used?” However, the project team determined that these questions would be inadequately measured by data available in health IT. Measures derived from health IT data would be subject to potential methodology limitations; namely, as proxy measures of use, they would have weak validity to determine use of exchanged health information. Health IT data primarily serves to assist providers in patient care and operations; measurement is a secondary data usage. Interpreting clinical data and audit logs for purposes beyond their express functions will force inference on the use of exchanged health information. In response, a method for a survey analysis was developed to accelerate survey data collection on exchanged information use. This method’s output is one set of suggested enhancements to existing surveys and measure sets focusing on new questions to existing surveys. Section 2.4 – Method for Survey Measures details this method.



In addition to four quantitative measure sets and two survey measures, TEP feedback from the first meeting drove two additional efforts to consider 1) how measures of exchanged health information use could be patient-centric, and 2) how a network analysis could be used for interoperability measurement. Section 2.2 -- Measurement Stacks presents the project team's analysis and suggested next steps to advance measurement of exchanged health information.

## 2.2 Measurement Stacks

To guide the measure development process, the project team developed an approach that addressed the exchange in terms of layers, or "stacks," to illustrate the bigger picture of if and how information flows. The stacks and their accompanying analyses guided the decision to focus measure development on quantitative measures of "send and receive" and qualitative survey measures of "use."

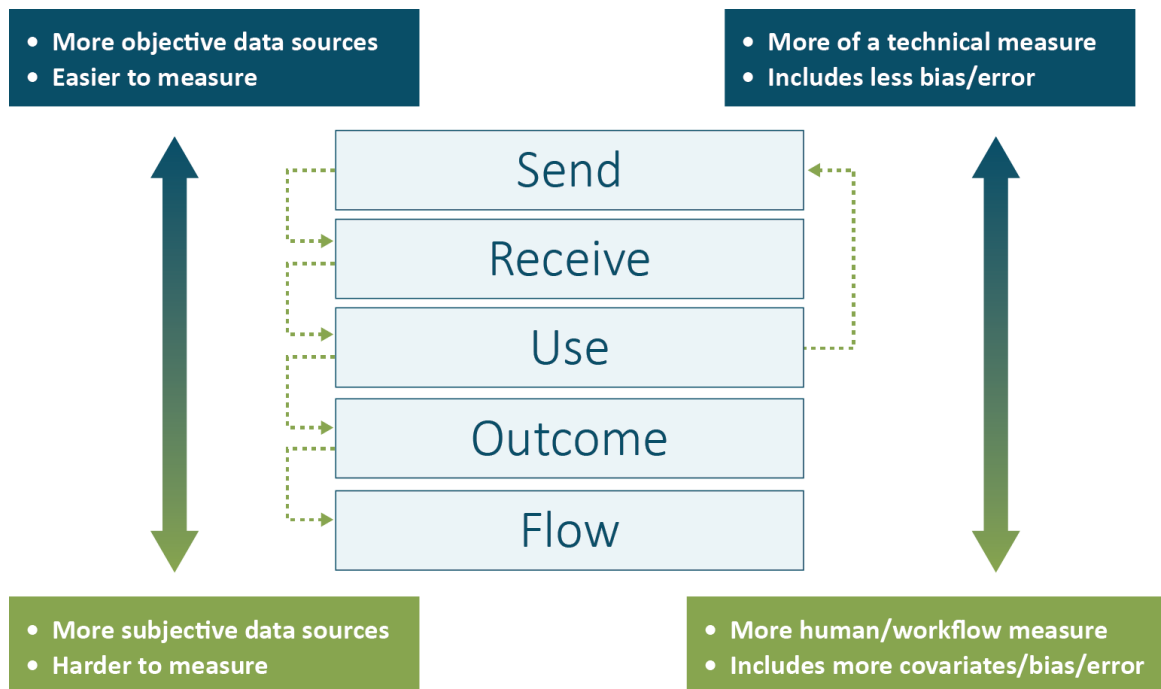
Interoperability can be calculated and/or measured at several levels, or "stacks": (1) send information, (2) receive information, and (3) use information, as well as (4) outcomes from information exchange and (5) flow of information among the nodes. In this context, flow is defined as the seamless exchange of clinical information among entities involved in supporting patient care. Each stack includes different sub-elements, and the methods and specifications to measure each stack vary. As there is not one modality to measure each stack, a combination of methods for measurement, including differing levels of automation, accuracy, complexity, and required time spans may be required to have a complete and accurate picture of the state of interoperability.

As an example, to measure the stack of "send and receive," measurement methods can be highly technical and include the use of data exchange and user log analysis. These methods can be highly automatable and accurate with medium complexity. To measure the "use" stack, subjective user surveys, interviews, as well as user log and workflow analyses are best employed and may yield results that are rated a medium in accuracy and complexity, but low in automation. For the "outcomes" and "flow" stacks, which may take years to generate measurable results, the best methods for measurement may be via quality metrics and statistical analysis. The measurement of these stacks, as listed in Table 1, provides detailed information on both technical interoperability and workflow interoperability. Figure 1 depicts characteristics of the measurement stacks.

**Table 1: Interoperability Stack and Measurement Specifications**

Stack/ Layer	Measurement Method	Measurement Automation	Measurement Accuracy	Measurement Complexity	Measurement Duration
<b>Send &amp; Receive</b>	<ul style="list-style-type: none"> <li>• Data Exchange Analysis</li> <li>• Log Analysis</li> </ul>	High	High	Medium	Weeks to Months
<b>Use</b>	<ul style="list-style-type: none"> <li>• User Surveys</li> <li>• User Interviews</li> <li>• Log Analysis</li> <li>• Workflow Analysis</li> </ul>	Low	Medium	Medium	Months to Year
<b>Outcomes</b>	<ul style="list-style-type: none"> <li>• Quality Metrics</li> <li>• Statistical Analysis</li> <li>• Manual Checks</li> </ul>	Medium	Very Low	High	One Year to Few Years
<b>Flow</b>	<ul style="list-style-type: none"> <li>• Analysis across multiple nodes</li> </ul>	Very Low	Low	Very High	Multiple Years

**Figure 1: Interoperability Stack Characteristics**



## 2.3 Method for quantitative measures

This section details the methods and key decisions used to develop quantitative measures for each TP domain. Quantitative measures for this project are designed to inform clinical, policy, and research stakeholders on the patterns and use of exchanged health information between certified and non-certified technology users. They are constructed with three main components to produce a numeric metric:

- **Initial Patient Population (IPP):** The group of patients or actions the measure is designed to measure;
- **Denominator:** A narrowed subset of patients or actions from the IPP (may be the same as the IPP); and
- **Numerator:** The patients or actions from the denominator for whom or for which the measure's process or outcome occurs.

The measurement stack analysis above, as well as the current state of health IT capabilities and gaps for information exchange across users of certified technologies, guided the project team in designing a method for the quantitative measure development. Findings from the environmental scan and Memorandum of Findings emphasized that data on TPs' health IT adoption is currently sparse. The data that is available yields varying, but generally, low rates of health IT adoption among TPs. Other key findings included:

- Data availability, standardization, quality, and usability varies greatly between trading partner domains;
- Data collected among trading partners is typically not standardized, or standardized to a non-clinical domain;
- Information exchange occurring between trading partner domains is highly immature (e.g., unstandardized point-to-point);
- In more mature exchange, the existence of granular data provides the means to measure several data points, but as trading partners' technology lacks maturity, their employment of technical-based assessments is limited; and
- Issues of trust in the use and electronic exchange of health information, such as data integrity and provenance, privacy and security, as well as competitive advantage for data ownership, are prevalent within trading partner domains and among incentivized providers.

Despite these limitations, stimulating a focus on interoperability measurement for TPs at an early stage of health IT adoption presents an important opportunity to influence standards development, refine measures to complement workflow, gather data, and monitor exchange trends to share best practices and promote policies that support innovative exchange.

Given these factors, the key decisions below guided measure set development. The measure sets should:

- Provide a foundation to understand data sharing patterns and strengthen the platform for future and more sophisticated measures to capture use of exchanged health information;
- Serve as a foundation to understand information exchange trends across users of certified technologies and TPs – not patient outcomes;
- Remain agnostic to transmission formats and methods to be adaptable as technology and electronic exchange workflows evolve;
- Be limited to data that can be obtained from health IT for providers using certified technologies; and
- Continue to undergo further specification and testing to precisely determine how robustly health IT in use by TPs can support the measure sets' data concepts.

With regard to ongoing specification and testing, the measures present numerical counts (e.g., one or more) and/or general conditions (e.g., a chronic condition) that qualify patients for the initial patient population and denominator. This level of granularity for the measure's specifications was purposefully selected in order to retain flexibility as the measures evolve. As a result, value sets are not proposed for

the measures in this report. It is expected that the measures are adopted by measure developers experienced in defining appropriate value sets, exclusions, and detailed measure logic.

The measures are presented as a “set.” Each measure within a set may be considered independently for implementation. However, when calculated sequentially on the same population of patients, the calculation produces patients for whom the entire “loop” of information exchange occurs. This approach places the number of patients in the numerator of a given Measure 1 into the denominator of a given Measure 2 so that the same group of patients is successively measured. For example, if a patient’s information was transmitted from Provider A to Provider B in Measure 1, that patient counts in Measure 1’s numerator. That patient can then be placed into Measure 2’s denominator to assess if the same patient’s information was transmitted from Provider B back to Provider A and counts in Measure 2’s numerator. This sequence continues for the entire proposed measure set to determine how many patients counted in the first measure’s denominator were present in the last measure’s numerator and experienced a complete sharing of information as their care crossed different settings and providers.

Measure topics were selected individually for each TP and guided by the following factors; these factors are further explained in each measure section:

- **Relationship to existing measures:** Related and existing measures do not explicitly focus on electronic communication with TPs;
- **Readiness to implement the measure set:** Certified technologies and health IT used by TPs can generally record and report the required data concepts, based on the environmental scan’s findings, interviews with TP domain experts and the project TEP members, and certification criteria established by the ONC Health IT Certification Program;<sup>1</sup> and
- **Patient population:** The measure sets are built on the platform of MU metrics established by CMS<sup>2</sup> and the functionalities established through the ONC Health IT Certification Program, but apply a specific intervention to a particular patient population to be more relevant and actionable for MU EPs and the TPs.

The measure sets presented here are constructed to leverage report architectures and common clinical workflows for existing measures on information sharing. Three of the measure sets focus on transitions of care and expand on the platform of MU metrics for information exchange, e.g., exchanging summary of care records. To the greatest extent possible, the measure sets attempt to avoid creating artificial workflow processes; thus, they seek to align with functionalities certified by the ONC Certification Program and workflows encouraged by the CMS EHR Incentive Program.

In the proceeding sections, each quantitative measure set includes a feasibility assessment. Feasibility generally refers to the ability to collect and analyze all of the data required to calculate a measure. Feasibility is an important factor for measure implementation because gaps and incomplete information result in inaccurate calculations and, ultimately, stakeholders’ lack of trust in the measure to reflect patient care. The feasibility evaluations offered in this report reflect preliminary alpha-testing assessments. It is expected that further feasibility assessment must occur following any additional specification and/or modification to the measure sets. For this report, feasibility is evaluated primarily based on two factors: 1) readiness of currently available health IT, generally implemented in practice settings for TPs and users of certified technologies, to record and report the necessary data concepts; and 2) prevalence of common workflows that facilitate complete data capture, without additional burden, in the course of patient treatment and general operations. For the TPs selected for this project, there are no standards and certification criteria for health IT. Accordingly, the feasibility assessment is based on findings of the environmental scan and interviews with TP domain experts and the project TEP members, and each assessment takes into account when manual processes may be required for calculation.

It is important to note that feasibility differs from validity. Feasibility assessments answer the question, “Can the data be collected?” Validity refers to how accurately a measure’s data reflects the intended measurement concepts. Validity plays a significant role in a measure’s acceptance by clinicians, administrators, purchasers, researchers, policy makers, and other stakeholders. Measures of interoperability and use can suffer from validity concerns if data derived from health IT only *infers* use.

Given these challenges, the measure sets in this report are process measures<sup>4</sup> focused on interoperability trends. They rely on objective measurement of data concepts such as “electronic send” and “electronic receipt” of patient information in an attempt to reduce validity concerns. Through further specification and testing, the measure sets’ validity requires thorough scrutiny to ensure that reporting systems for certified technology users and TPs comprehensively collect the required data without gaps and inferences.

### ***Considerations for Transitions of Care Measure Sets for Behavioral Health, Care Planning & Management, and Social Services Trading Partners:***

To reflect the importance of information exchange for jointly monitored patients, three measure sets are designed to capture the following data concepts for exchange opportunities: (1) transitions of care<sup>5</sup> and (2) clinical events that a provider deems necessary for information exchange.

Health IT used by TPs are generally capable of capturing these data concepts. Providers with technology certified to the ONC 2014 Edition Health IT Certification Criteria will have all of the discrete data fields available to automatically capture the measure sets’ data concepts for the send and receipt of patient information. Providers, particularly TPs, without the 2014 Edition capabilities implemented may not find these data concepts available in their technology for electronic capture and automatic reporting, unless the capabilities have been added and the reporting data fields configured manually. Given a range of products and variation in local implementations, some manual configuration of certain data concepts and/or reporting capabilities would be expected. As mentioned in the section above, manual configuration affects the feasibility assessment for each measure set. The overall feasibility of data capture and calculation is expected to steadily improve, however, as technology and exchange capabilities advance.

The transition of care measure sets were initially designed to be initiated with the event of a referral. Upon consultation with the TEP, the specifications abandoned the referral initiation and were expanded to capture indications of any transition of care, including referrals and any clinical event warranting information exchange at the discretion of the clinician. Examples include, but are not limited to, changes to a patient’s problem list or medication list, a new care plan, or a patient’s evolving preferences for treatment. This decision allows the measure sets to capture existing communication patterns, as well as those newly initiated by a referral.

At present, to record and report transitions of care and clinical events that warrant information exchange, some health IT utilize a background reporting logic that automatically captures patients for inclusion in the measure calculation (e.g., all new encounters or all referrals); this method requires no user action and may be customized for specificity. Other health IT use a check box placed in the interface to allow users to determine when information exchange is relevant to a patient’s management. At this stage of measure specification, the measure sets accommodate both approaches to remain adaptable to evolving report logic capabilities and innovative decision support methods to assist clinicians with information exchange. It is important for measures to limit the number of clicks required for the sake of “meeting the measure.” Through technology advancements, the measure sets’ further specification, implementation, and testing, it is expected that a calculation method will emerge that appropriately balances a “check box” approach with background reporting logic to define qualifying clinical events.

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<sup>4</sup> A measure that focuses on steps that should be followed to provide good care. There should be a scientific basis for believing that the process, when executed well, will increase the probability of achieving a desired outcome, as defined by the Blueprint for the CMS Measures Management System.

<sup>5</sup> Transition of Care definition: The movement of a patient from one setting of care (hospital, ambulatory primary care practice, ambulatory, specialty care practice, long-term care, home health, rehabilitation facility) to another. At a minimum this includes all transitions of care and referrals that are ordered by an eligible professional.



The measure sets' data concept for "information exchanged" is purposefully broad and agnostic to specific document types and discrete information exchanged. The measure set's initial draft used summary of care and referral documents to count as instances of information exchange. As with the decision above, TEP consultation guided the measure sets to remain adaptable to technology advancements, rather than applying specific definitions (e.g., the C-CDA document or the Common Clinical Data Set). Through further specification, implementation and testing, it is expected that evolving methods of information exchange can be observed and evaluated to refine and focus the measure sets.

As the key decisions above emphasize, the measures presented in this report are introduced at a time when the state of technology adoption is low, but advancing, for TPs. The specifications have been developed to retain flexibility and adaptability to respond to evolving technical standards and clinical workflows.

As discussed further in Section 5.2 – Next Steps, the next steps include further specification and testing, as well as championship by the relevant specialty and professional societies to ensure the measures can assist clinicians and other stakeholders in understanding interoperability trends and identifying and spreading best practices. Testing is expected to identify and spur development in areas where standards are required for interoperability between certified and non-certified technology users.

## 2.4 Method for survey measures

This section details the methods and key decisions to develop two measures for surveys. Surveys are a standard tool for empirical research and can provide critical insight into respondents' experiences and opinions, identify gaps, and aid in planning for the desired future state. Quantitative measures of health information exchange, paired with qualitative measures (e.g. surveys) can determine whether the information exchanged was useful, if it was acted on to improve patient care, and if it increased patient satisfaction. Moreover, when designed to avoid bias, particularly on subjects related to health IT use, surveys can provide data on the value of exchanged health information use that is not obtainable from electronic sources, such as clinical data in health IT and audit logs.

In the initial phase of the project to understand the current state of interoperability measurement for certified and non-certified technology users, a literature review and environmental scan uncovered a number of survey instruments currently in use or in development for future use that query respondents generally on health IT. The project team conducted a survey analysis of the tools gathered to determine how, if at all, surveys addressed the topic of use of exchanged health information. The survey analysis was not designed to serve as a complete compendium on all existing surveys that address health IT. Generally, surveys without questions related to health IT or information sharing (including non-electronic information sharing) were not included, as it may not be appropriate to ask granular questions on trading partners and electronic exchange patterns before first adding higher level questions on health IT adoption and use.

As part of the survey analysis, the existing surveys and relevant survey questions were compiled and characterized by a number of criteria including survey/tool sponsor, purpose, current state of use, and target audience (classified as provider-centric or patient-centric). All relevant questions were then narrowed based on relevance to this project.

In total, 15 federal, state and private surveys were reviewed, including several sponsored by the ONC. The ONC-sponsored surveys included the American Health Association's Annual Survey Information Technology Supplement, the Health Information National Trends Survey, and the National Electronic Health Records Survey of 2016.

Though a complete review of all surveys directed to clinicians was out of scope for this effort, the survey analysis suggests that existing surveys concentrate on the adoption of health IT broadly. When surveys ask more granular questions about health IT use, they query respondents on the use of particular functions, such as electronic prescribing, computerized provider order entry, and information exchange tools. A small number of surveys delve into questions on frequency and methods of information

exchange. However, no surveys reviewed directly ask respondents what happens with information received from patients and other providers, nor do they query respondents on the value of information sent and received.

As described further below, these surveys instruments have the potential to be readily modified in future versions to begin data collection on the use and value of exchanged health information. When analyzed alongside clinical and claims data, this survey data could greatly contribute to the understanding of where current functionalities meet workflow needs and where functionality can evolve to facilitate information sharing, where networks emerge, and what policy levers can encourage exchange.

Survey measures for this project were designed to provide suggestions on where existing surveys could be expanded to increase knowledge on use of exchanged health information by certified and non-certified technology users. Opportunities for survey additions or adjustments are made to collect data relevant to the following measurement priorities:

- What other providers do you send information to?
- What providers do you receive information from?
- What specific information is important to receive?
- How do you use the information you received?

Based on these prioritized areas, the project team designated a limited set of four survey questions to collect information on exchange trends, below. Each survey was reviewed for coverage of these four questions. Where gaps were found, new questions were suggested for addition to surveys that do not query respondents on specific exchange partners and/or information exchanged. Adjustments to existing questions were suggested for surveys that currently query respondents on exchange partners and/or information exchanged. Specifically, suggestions were proposed to ensure that, at a minimum, respondents were queried on:

- Send and receive from trading partners:
  - Behavioral health providers
  - Care planning and management
  - Social services
  - PGHD and mHealth
- Send and receive of a summary of care document and/or problem lists, medication lists, and medication allergy lists
- Importance of receiving a summary of care document and/or problem lists, medication lists, and medication allergy lists
- Use of received summary of care document and/or problem lists, medication lists, and medication allergy lists

Survey developers may expand upon these questions, using several sub-questions to collect more-detailed information as deemed appropriate.

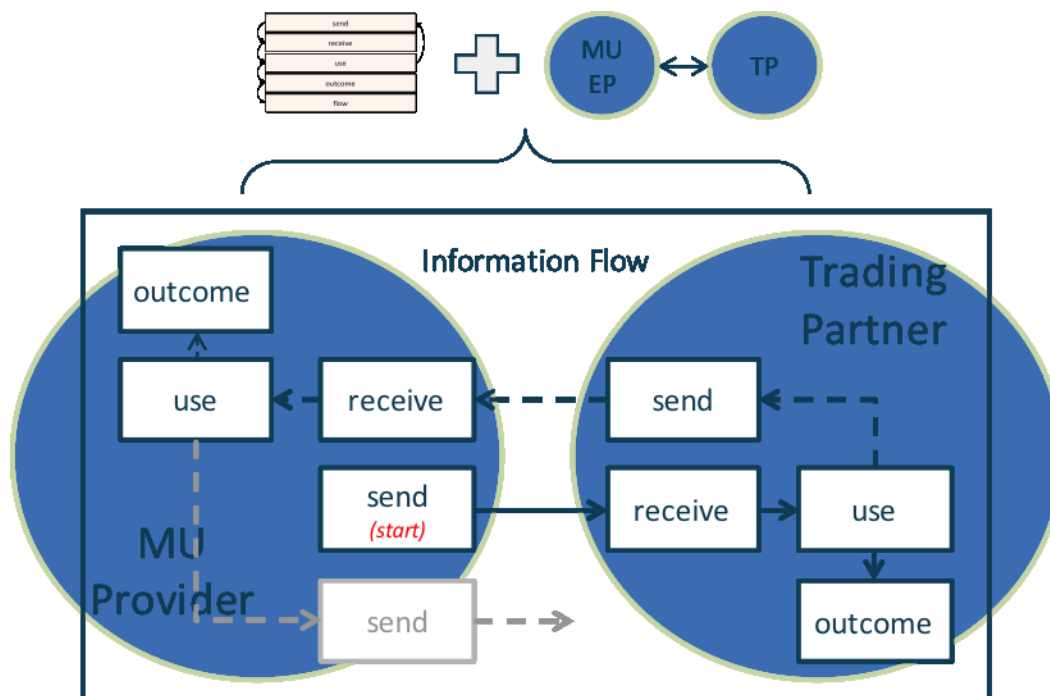
## 2.5 Measurement Scope

Interoperability and the flow of information can be measured between two nodes or across a network of multiple nodes, specifically at the patient level, the provider level, and at the population level. For example, the exchange of information between one certified technology user and one non-certified technology user (for example, social services) - signified as two nodes, each one node - may be traced, measured, calculated, and awarded a score to assess the level of interoperability. Interoperability may also be measured in a multi-node network context, such as the exchange between a social services TP and each of their respective partners, the patient and the hospital (provider). At the population level, measurement can extend to a large network of nodes and their respective interactions to gather an understanding of overall interoperability on a single patient level, the patient's provider networks, or over multiple patients. The measurement levels provide a more prescriptive view into the flow of data, as well as information on who accesses data and where they access the data, if at all.

## 2.6 Network Analysis Considerations

Conceptually, information moves to and from the appropriate entities to ensure that patients and providers (the “nodes” on the network) receive the data they need to make the right care decisions at the right time. Patient care requires coordination across one or more providers, and it is important to understand who talks to whom, how often, and the effectiveness of those exchanges. In an effort to trace the movement of health information through the various channels, the project team outlined a conceptual framework for a network analysis to provide a hypothetical vision of this network and interoperability. See Table 1: Interoperability Stack and Measurement Specifications in Section 2.2 – Measurement Stacks and Figure 2 below: Applying the Interoperability Stack to Network Nodes.

**Figure 2: Applying the Interoperability Stack to Network Nodes**



The network analysis envisions the current state of traffic across the layers of the network, the associated complexity across each route, the varying use of technology at each node, the transition from exchange to use, and barriers and gaps. As there are many ways to exchange information and to effectively measure interoperability and the levels of required interoperability, it is important to describe, comprehend, and measure the network efficiency and impact on the capability to exchange protected health information (PHI) electronically with all nodes. See Table 2: Feasibility of Measuring Interoperability Stack Elements Across Node Levels for a summary.

**Table 2: Feasibility of Measuring Interoperability Stack Elements Across Node Levels**

IO Stack Element	Node Concentration Levels			
	Patient	Provider (Clinical)	Partner (Trading)	Population
<b>Send &amp; Receive</b>	High <i>(objective and subjective data)</i>	High <i>(objective data)</i>	High <i>(objective and subjective data)</i>	Medium <i>(objective data; needs large detailed datasets)</i>
<b>Use</b>	Medium <i>(subjective data; surveys)</i>	Medium <i>(mainly subjective data; surveys)</i>	Low <i>(mainly subjective data; surveys)</i>	Impractical <i>(needs a survey for all members of all nodes)</i>
<b>Outcome</b>	Low <i>(requires acquiring patient reported outcomes; subjective data)</i>	Medium <i>(mainly based on commonly reported clinical quality measures)</i>	Very Low <i>(defining a unique outcome across all nodes in complex)</i>	Very Low <i>(defining a unique outcome across all nodes in complex)</i>
<b>Flow</b>	Very Low <i>(complex to measure)</i>	Very Low <i>(complex to measure)</i>	Impractical <i>(too complex to measure)</i>	Impractical <i>(too complex to measure)</i>

## 2.7 Person-Centric Measure Implications

Patient-centric views and measures provide the much-needed insight into the outcomes of exchange. A patient-centric measure produces information on the degree of information exchange occurring between the patient and the patient’s providers to benefit the patient’s health and health care. While organizations such as Accountable Care Organizations are incentivized to report outcomes measures,<sup>6</sup> the data is currently too sparse to account for a patient-centric view.

As the current arena is not ready for patient-centric measures, it is vital to start to understand whether data is at all available and present, and if so, if it is consistently captured and represented for measurement. Questions such as, “What kind of exchange is happening?” and “Who is exchanging this information?” need to be addressed. It can be argued that patient-centered measures can be only appropriate with high levels of reliability in connections and persistent, accurate data stores. A patient-level measure can provide information on how frequently providers communicate when jointly managing a common set of patients. However, the patient-centered measure can pinpoint the communication patterns for a specific patient. This type of measure requires personally identifiable information (PII), but would allow for the construction of patient-specific network analyses. If information does not flow, it is critical to identify the barriers and what resources are required to lower or remove them.

<sup>6</sup> A measure that assesses the results of healthcare that are experienced by patients: clinical events, recovery and health status, experiences in the health system, and efficiency/cost, as defined by the Blueprint for the CMS Measures Management System.



## 3 Survey Measures

The survey measure packets are designed to identify opportunities to enhance and refine currently existing surveys to capture data on information exchange use. The complete survey measure packets, with a list of all surveys reviewed and the suggested adjustments and additions, are provided in Appendix Sections 6.1 and 6.2. See Section 2.4 – Methods for Survey Measures for an explanation of the measures' development.

### 3.1 Survey Measure: Adjustments

The survey adjustments packet (Appendix Section 6.1), suggests adjustments to questions in existing surveys that query respondents on exchange partners and/or information exchanged. These adjustments address questions that are not focused on electronic exchange or could be tailored to collect data on a particular exchange partner or type of information exchanged. Suggestions are provided for 10 of the 15 surveys reviewed, including 3 state-sponsored surveys, 5 federally-sponsored surveys, and 2 privately-sponsored surveys. Example adjustments include expanding relevant questions to including selected trading partners and broadening response categories to the types of information exchanged.

A summary the survey adjustments packet is provided in Table 3, below.



**Table 3: Summary of Adjustments to Existing Survey Questions**

Survey (Level) - # of Adjustments	Survey (Level) - # of Adjustments
Behavioral Health Information Technologies Survey (Federal) - 1	2011 Minnesota Licensed Nursing Homes and Certified Boarding Care Homes Assessment of EHR Adoption and Use and HIE (State) - 5
CAHPS Clinician and Group Surveys: Supplemental Items for Adult Surveys 2.0 – HIT Supplement (Federal) - 1	014 Minnesota HIT Local Public Health Survey (State) - 4
CDC National Center for Health Statistics (NCHS) National Electronic Health Records Survey (Federal) - 3	2015 Minnesota HIT Ambulatory Clinic Survey (State) - 4
Health Information National Trends (HINTS) 5 Survey (Federal) - 2	2014 American Hospital Association (AHA) Annual Survey Information Technology Supplement (Private) - 2
Testing Experience and Functional Tools (TEPFT) PHR Planning and Implementation Assessment Toll: HIT Environmental Scan (Federal) - 4	Medical Group Management Association Center for Research (MGMA CFR): Assessing Adoption of Effective (Private) - 2

### 3.2 Survey Measure: Additions

The survey additions packet (Appendix Section 6.2), suggests the addition of new questions to state, federal and private surveys that do not query respondents on exchange partners and/or information exchanged. Example additions include questions that determine if health information of various types were sent, received, or used from each of the relevant trading partners. Offered as suggestions for further discovery, the wording provided is for example only; survey owners would have the discretion to revise and expand how the questions and responses are framed, while retaining the minimum content proposed.

Survey additions were identified for the following surveys:

**Federal:**

- HINTS 5 Questionnaire Draft 2016
- Behavioral Health Information Technologies Survey
- CAHPS Clinician and Group Surveys: Supplemental Items for Adult Surveys 2.0 – HIT Supplement

**State:**

- Rhode Island Health Care Quality Performance Program: Physician Health Information Technology Survey
- Minnesota Health IT Surveys

**Private:**

- KLAS 2016 Interoperability Tool
- Village Annual Members Survey (adapt for patient perspective)
- Medical Group Management Association Center for Research: Assessing Adoption of Effective Health Information Technology Questionnaire
- Community Clinics Initiative: 2005 Information Management Assessment – Medical Director Survey
- Community Chronic Care Network



## 4 Quantitative Measure Sets

### 4.1 Behavioral Health Measure Set

#### *Introduction*

This measure set (Appendix Section 6.3) is developed to measure electronic exchange between a behavioral health (BH) trading partner (TP) using non-certified technology and a Meaningful Use (MU) Eligible Professional (EP) using certified technology.

The measure set presents four measures that follow bi-directional information exchange for the joint management of a patient with behavioral health and a chronic condition. Interviews with behavioral health domain experts and TEP members stressed that a measure population narrowed to patients with a behavioral health and a chronic condition could make the measure relevant and actionable for BH TPs and MU EPs (as compared to a broader patient population without a condition warranting treatment by the opposite exchange partner). This measure set may be more relevant to BH TPs and MU EPs providing care in settings where primary care and behavioral health are not integrated and where these provider types do not share access to the same patient records.

Figure 3 displays a series of four events that occur along the course of patient care and trigger an opportunity for exchange between the BH TP and the MU EP. Each event corresponds to one measure each for the BH TP and the MU EP “sides” of information exchange. For example, Event 1 corresponds to Measure 1A for MU EPs and Measure 1B for BH TPs.

**Figure 3: Measure Set for Behavioral Health Trading Partner – Change in Condition following Electronic Information Exchange**

<p>Event <b>1</b></p> <p>A patient with behavioral health and chronic conditions has a transition of care and/or other relevant clinical event.</p>	<p><b>Measure 1A - MU EP:</b> The percentage of patients with a behavioral health and a chronic condition with electronic patient health information sent to a behavioral health provider.</p> <p><b>Measure 1B - BH TP:</b> The percentage of patients with a behavioral health and a chronic condition with electronic patient health information received.</p>
<p>Event <b>2</b></p> <p>The patient receives follow-up care by the behavioral health specialist.</p>	<p><b>Measure 2A - MU EP:</b> The percentage of patients from measure 1A with follow-up care, following electronic send of patient information.</p> <p><b>Measure 2B - BH TP:</b> The percentage of patients from measure 1B with follow-up care, following electronic receipt of patient information.</p>
<p>Event <b>3</b></p> <p>The behavioral health specialist communicates patient status to the referring provider.</p>	<p><b>Measure 3A - MU EP:</b> The percentage of patients from Measure 2A for whom electronic patient health information is received.</p> <p><b>Measure 3B - BH TP:</b> The percentage of patients from Measure 2B for whom electronic summary of care record is sent to the referring provider.</p>
<p>Event <b>4</b></p> <p>The patient is monitored by both providers for a change in the behavioral health condition.</p>	<p><b>Measure 4A - MU EP:</b> The percentage of patients from Measure 3A whose depression status improved.</p> <p><b>Measure 4B - BH TP:</b> The percentage of patients from Measure 3B whose depression status improved.</p>

### **Rationale for Selection**

The measure set is a starting point for interoperability measurement across MU EPs and BH TPs. As the measurement field advances sophisticated, evidence-based methods to pinpoint the effect of exchange on health information use and patient outcomes, this measure set is intended to serve as a foundation for understanding exchange patterns.

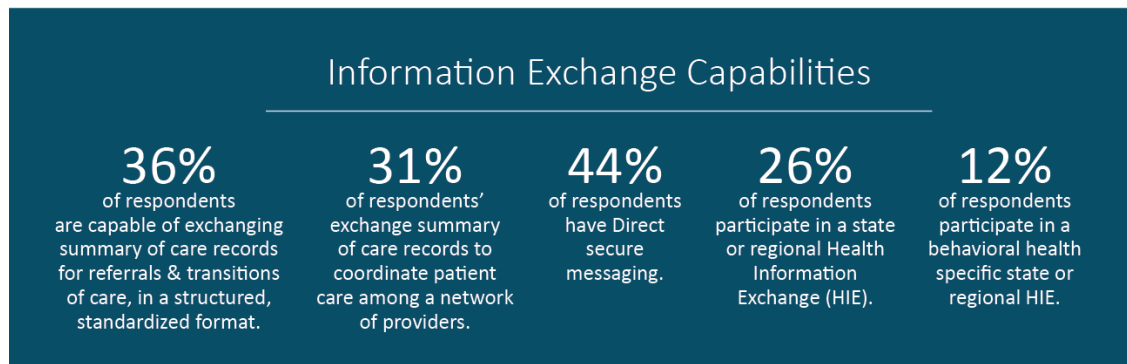
The following factors were considered to develop a measure suitable for BH TPs, given the current landscape of existing measures and metrics, technology capabilities, and policy drivers.

#### **(1) Relationship to Existing Measures:**

Existing measures on information exchange and behavioral health do not explicitly focus on *electronic communication with BH TPs*. Measure developers have developed important measures for behavioral health, and policy makers have implemented several of them in quality measurement and incentive programs. However, these measures focus on screenings, changes in condition, and follow-up care for patients with behavioral health conditions; they do not evaluate health information exchange patterns over the course of a patient’s care management or health information use. Further, existing behavioral health measures do not strictly assess electronic information exchange; rather, they permit information exchanged through fax or on paper. The American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI) and the Institute for Clinical Systems Improvement (ICSI) have developed measures assessing communication between behavioral health and primary care for patients with depression, and these measures are an important reference for this measure set. However, they are not exclusively focused on electronic information exchange and do not assess communication back to the provider who initiated exchange. See Appendix Section 6.3 for more information.

**(2) Readiness to Implement the Measure Set:**

There is no current national dataset that provides information on health IT adoption by behavioral health providers, presenting a challenge for assessing readiness to implement interoperability measures. However, the 2015 Behavioral Health Information Technologies Survey (BHITS) collects data from the Substance Abuse and Mental Health Services Agency (SAMHSA) grantees on the level of technology adoption and interoperability. It found that 62% of respondents use health IT certified to the standards and capabilities designated by the ONC Certification Program. With regard to information exchange capabilities, the 2015 BHITS found:



- 36% of respondents are capable of exchanging summary of care records for referrals and transitions of care, in a structured, standardized format;
- 31% of respondents' exchange summary of care records to coordinate patient care among a network of providers;
- 44% of respondents have Direct secure messaging;
- 26% of respondents participate in a state or regional Health Information Exchange (HIE); and
- 12% of respondents participate in a behavioral health specific state or regional HIE.

The BHITS rates of technology adoption are similar to the results of a 2012 survey of community behavioral health care providers conducted by The National Council for Community Behavioral Health Care. Findings from over 500 behavioral health organizations indicate that 21% had fully adopted EHRs, with 36% of survey respondents reporting that the “ability to communicate with providers to improve care coordination” was a primary driver.

In addition to health IT adoption rates, the standards arena is expanding to handle information exchange for behavioral health patients. In response to patient privacy and security concerns, in addition to myriad federal and state legislation, HL7 has developed Data Segmentation for Privacy (DS4P), Release 1, a standard that allows CFR Part 2 information to be “left behind” when a summary of care record is transmitted to another provider. When implemented, this newly developed standard promises to manage patient consent and facilitate interoperability. This measure set has been designed to be “ready” as information exchange between MU EPs and BH TPs increases. As health IT developers and providers test, implement, and adopt emerging standards that facilitate exchange that was previously hindered by privacy and security regulations, there is an opportunity to introduce measures now that can inform clinicians, researchers, and policy makers of accelerating exchange trends.

**(3) Patient Population:**

The measure set focuses on patients with a behavioral health condition and a chronic condition. This behavioral health condition should require treatment by a behavioral health specialist, affect the treatment of other conditions by a primary care provider, and be diagnosed and monitored with a standard screening tool.

Enhanced coordination between primary care and behavioral health providers is a commonly cited need for electronic information exchange. At early stages of measure conceptualization, expert interviewees agreed that, while behavioral health diagnoses are critical to inform primary care and other specialists and care team members, often, the most important conditions to jointly monitor are those that would, potentially, exacerbate chronic medical conditions. For example, a patient diagnosed as bipolar with anxiety disorders may also have diet and exercise needs for which behavioral health and primary care providers would benefit from routine information exchange and coordination. Communication trends between MU EPs and BH TPs are important to measure, given the need to ensure patients receive care from a professional with the appropriate scope of practice to treat specific conditions. In many scenarios, primary care successfully treats many behavioral health conditions and, indeed, must provide this care due to behavioral health professional shortages and access constraints for many patients.

### **Feasibility Assessment**

This measure set has overall moderate to high feasibility for BH TPs and MU EPs. See Section 2.3 – Method for Quantitative Measures for an explanation of the feasibility assessment factors utilized in this report.

There are two potential exceptions to this feasibility rating, due to challenges that could require manual verification for reporting:

- Measure 3A – MU EP: requires the MU EP’s technology to recognize that health information was sent by the same BH TP recipient of health information in Measure 1A – MU EP; and
- Measure 3B – BH TP: requires the BH TP’s technology to recognize that health information was sent to the MU EP who sent information in Measure 1B – BH TP.

These two measures present challenges to the reporting logic required to link information sent and received to the same provider. Currently, the best available standard, the C-CDA, does not have a format that requires a standard representation of provider ID, and specialty codes and other unique provider identifiers exist, but may not be available to all providers who could be measured.

Measure 2A – MU EP assesses the percentage of the MU EP’s patients for whom the BH TP initiates treatment. This measure may not be appropriate for the MU EP “side” of exchange, as it would require data obtained from the BH TP’s electronic records system. In some HIE settings and integrated health systems, this data may be obtainable. Absent the technological and workflow structures to access this data, the measure could reasonably be omitted for reporting for MU EPs.

The measure set will be feasible for any condition that warrants management by a behavioral health specialist and that can be tracked for a change in condition; however, tracking a change in condition may present feasibility challenges for providers without the reporting capabilities to identify before- and after-measurements and perform the analysis on whether a positive or negative change occurred.

### **Limitations**

#### **Measuring Use and Outcomes**

The measure set presented in this report focuses on process measures with objective data concepts, such as “information received.” This approach was selected given the challenges of measuring outcomes related to exchanged information use. See Section 5.1 -- Barriers and Lessons Learned for Quantitative Measures for additional analysis on outcomes measurement and this key decision. In addition to the process measures, the measure set also presents one measure (Measure 2) that assesses use and one measure (Measure 4) that assesses outcomes in a preliminary attempt to contribute to the foundation of currently available methods to evaluate interoperability benefits.

Quality Insights of Pennsylvania (QIP) and the National Committee for Quality Assurance (NCQA) have developed measures that assess referrals and communication for behavioral health treatment and could be consulted for appropriate exclusions that validly capture why a provider might decide against initiating



treatment. QIP developed the measure Preventive Care and Screening: Screening for Clinical Depression and Follow-up Plan with follow-up care specified with the following value sets: depression screen encounter, referral for depression, additional evaluation for depression, follow-up for depression, depression medications, and suicide-risk assessment. This measure specification provides a significant foundation for future development of a measure set following treatment and outcomes.

Measure 4 assesses the percentage of patients for whom a change in condition occurs following information exchange between a MU EP and a BH TP. This measure is subject to the limitations that accompany proxy outcomes measures, namely, that improvements in a patient's condition are impacted by several factors, one of which may be enhanced electronic communication. As noted previously, to date, the peer-reviewed scientific literature has struggled to consistently prove a causal relationship between information exchange and improved health outcomes, although positive relationships have been observed.

As such, it is important to emphasize that Measure 4 does not seek to assert that a relationship between use of exchanged health information and improved outcomes will exist; rather, it provides a foundation to measure electronic information exchange trends across behavioral health providers and their trading partners that may assist future measure developers and researchers. Building on this foundation, it is expected that methodology advancements for measuring outcomes as a result of interoperability and exchanged data use will produce more sophisticated measures with rich data sources.

## 4.2 Care Planning and Management Measure Set

### *Introduction*

This measure set (Appendix Section 6.4) is developed to measure electronic exchange between a care planning and management (CPM) trading partner (TP) and a Meaningful Use (MU) Eligible Professional (EP).

The measure set presents three measures that follow bi-directional information exchange for a MU EP and CPM TP's joint management of a patient with more than one chronic condition for whom the CPM TP knows the patient's other active care providers. Figure 4 displays a series of three events that occur along the course of patient care and trigger an opportunity for exchange between the CPM TP and the MU EP. Each event corresponds to one measure for the CPM TP "side" of exchange. Data for measurement is derived from the CPM's electronic record system; therefore, there are no measures presented for the MU EP "side" of exchange.

**Figure 4: Measure Set for Care Planning & Management Trading Partner – Electronic Information Exchange for Patients with More than One Chronic Condition**

<p>Event <b>1</b></p>	<p>A CPM TP documents (or has existing documentation of) other provider(s) actively treating a patient with multiple chronic conditions.</p>	<p><b>Measure 1 - CPM TP:</b> The percentage of unique patients with more than one chronic condition for whom a provider has documentation of the other treating providers.</p>
<p>Event <b>2</b></p>	<p>At a transition of care and/or other relevant clinical event, the CPM TP electronically sends patient information to the patient’s other active provider(s) within one week.</p>	<p><b>Measure 2 - CPM TP:</b> The percentage of unique patients for whom the provider electronically sends patient information to a minimum of one other actively treating provider within one week (for example), following a patient visit at which either a transition of care and/or other relevant clinical event occurred.</p>
<p>Event <b>3</b></p>	<p>The CPM TP electronically receives patient information from a provider who was sent patient information in Event 2.</p>	<p><b>Measure 3 - CPM TP:</b> The percentage of unique patients for whom a provider electronically receives patient information from a minimum of one of the treating providers electronically sent patient information in Measure 2.</p>

**Rationale for Selection**

The measure set is a starting point for interoperability measurement across MU EPs and CPM TPs. As the measurement field advances sophisticated, evidence-based methods to pinpoint the effect of exchange on health information use and patient outcomes, this measure set is intended to serve as a foundation for understanding exchange patterns.

The following factors were considered to develop a measure suitable for CPM TPs, given the current landscape of existing measures and metrics, technology capabilities, and policy drivers.

**(1) Relationship to Existing Measures:**

Existing measures on information exchange and behavioral health do not explicitly focus on *electronic communication with CPM TPs*. Measure developers have developed important measures for sending referrals and specialist consults with specific patient information, and policy makers have advanced several of these measures for implementation in quality measurement and incentive programs. However, they do not exist in a grouped set that considers health information exchange for all of the patient’s active care providers over the course of a patient’s care management. Further, existing communication measures do not strictly assess electronic information exchange; rather, they permit information exchanged through fax or on paper. The National Committee for Quality Assurance (NCQA) has developed a measure addressing receipt of a specialist report following a referral, which addresses bi-directional communication. However, this measure set differs in assessing the landscape of a patient’s active care providers, exclusive electronic information exchange, and the provider’s discretion for the events that warrant electronic information exchange. See Appendix Section 6.4 for more information.

**(2) Readiness to Implement the Measure Set:**

Commercially available technologies implemented by MU EPs and CPMs can generally record and report the measure set’s electronic transmission data concepts, namely, the send and receipt of patient information. Limited data exists to determine the level of technology adoption across CPM TPs because of their diverse practice settings and personnel diversity, however, it is certain to lag behind providers who are eligible for financial incentives. Background research for measure specification found that there are disparate and diverse health IT systems currently in use by CPM TPs, several of which have exchange functionality, such as use of mobile health and Direct messaging. Functionality varies by the segment attempting to communicate. It is important to acknowledge that CPM TPs’ adoption lags behind MU EPs

will limit widespread measurement. However, advancing the measure set for further specification and implementation will contribute to the overall understanding of technology barriers and exchange trends, as well as highlight where best practices and successful exchange patterns may help accelerate adoption and exchange in other settings.

### ***(3) Patient Population:***

The measure set focuses on patients with one chronic condition (or more) for whom the provider has documentation of the patient's other active care providers. Initially, the patient population was narrowed to patients with a change in their problem list, medication list, and/or medication allergy list during a patient visit. However, upon consultation with the TEP, this constraint was removed to broaden the measure to any patient with documentation of other active care providers, for whom the provider decides information exchange is necessary.

In reviews of the measure set, the TEP and the internal development team cautioned against advancing a measure that spurs unnecessary information exchange of lengthy patient records that lack parsimony. In response, the CPM measure set proposes three measures that focus on a patient population with documentation of more than one chronic condition and the other providers actively providing treatment for those conditions. By creating these parameters, the measure set concentrates on patients for whom communication across a relevant network of providers is critical to managing health, rather than encouraging a propulsion of information exchange that may lack clinical relevance. The measure set is intended to allow the provider to exercise discretion over which patient conditions necessitate communication with other providers, as well as the specific providers who receive information. Thus, it allows providers to select a minimum of one actively treating provider to receive health information following a patient visit, and implementation would permit further numerator refinement to include patients who had a change in their condition or treatment plan documented during a patient visit.

### ***Feasibility Assessment***

This measure set has overall low to moderate feasibility for CPM EPs. The low feasibility is attributed to:

- Report calculation logic and data concepts that likely involve the manual verification of information exchange recipients; and
- Infrequent information capture and maintenance of patients' external care team, as well as the potential burden of manual configuration if an electronic record system does not have "off the shelf" fields to capture this information.

See Section 2.3 – Methods for Quantitative Measures for an explanation of the feasibility assessment factors utilized in this report.

With regard to the first feasibility limitation, Measure 3 – CPM TP requires the TP's technology to recognize that health information was received from the recipient of information exchange in Measure 2 – CPM TP. Measure 3 presents challenges to the reporting logic required to link sent and received information to the same provider. Currently, the best available standard, the C-CDA, does not have a format that requires a standard representation of provider ID, and specialty codes and other unique provider identifiers exist, but may not be available to all providers who could be measured.

With regard to the second feasibility limitation, feasibility will be greater in settings where providers routinely capture and maintain information on their patients' external care team members. The Medicare Wellness Visit - offered to beneficiaries one time a year since 2011 - includes documentation of current providers involved in active patient care. Reimbursement for this service promises to increase documentation of external care team members among providers performing this visit over time, for Medicare eligible patient populations.

## *Limitations*

### ***(1) Measuring Use and Outcomes:***

The measure set presented in this report focuses on process measures with objective data concepts, such as “information received.” This approach was selected given the challenges of measuring outcomes related to exchange and exchanged information use. See Section 5.1 -- Barriers and Lessons Learned for Quantitative Measures for additional analysis on outcomes measurement and this key decision. The measure set presents no measures that explicitly attempt to measure use and patient outcomes. Measure 3 assesses the percentage of patients for whom the CPM TP receives communication back from a provider on the patient’s active care manager list, but does not seek to imply that the communication was received as a result of the initial send in Measure 2.

At this stage of measure specification, it was considered inappropriate to propose a patient outcomes measure due to two factors. First, the measure specification is purposefully open to which chronic conditions place the patient in the calculation. In further specification, conditions should be selected for inclusion if evidence links related patient outcomes to information exchange. Secondly, improvements in a patient’s condition are impacted by several factors, one of which may be enhanced electronic communication. To date, the peer-reviewed scientific literature has struggled to consistently prove a causal relationship between information exchange and improved health outcomes, although positive relationships have been observed.

The National Committee for Quality Assurance (NCQA) has developed measures that assess referrals and communication for patients and could be consulted for appropriate exclusions that validly capture why a provider might decide against communication with the patient’s active care providers.

## **4.3 Social Services Measure Set**

### *Introduction*

This measure set (Appendix Section 6.6) is developed to measure electronic exchange between a social services (SS) trading partner (TP) and a Meaningful Use (MU) Eligible Professional (EP).

This measure set presents three measures that follow bi-directional information exchange for a MU EP and SS TP’s care of a patient reporting financial resource strain and/or intimate partner violence. Figure 5 displays a series of three events that occur along the course of patient care and trigger an opportunity for exchange between the SS TP and the MU EP. Each event corresponds to one measure each for the SS TP and the MU EP “sides” of exchange. For example, Event 1 corresponds to Measure 1A for an MU EP and Measure 1B for a SS TP.

**Figure 5: Measure Set for Social Services Trading Partner –  
Electronic Information Exchange for Patients with Referral to Social Services Trading Partners**

<p>Event <b>1</b></p> <p>A patient reports financial resource strain and/or intimate partner violence and is referred to social services.</p>	<p><b>Measure 1A - MU EP:</b> The percentage of patients who report financial resource strain and/or intimate partner violence with an electronic referral and health information sent.</p> <p><b>Measure 1B - SS TP:</b> The percentage of patients who report financial resource strain and/or intimate partner violence with an electronic referral and health information received.</p>
<p>Event <b>2</b></p> <p>The patient has a visit with social services.</p>	<p><b>Measure 2A - MU EP:</b> The percentage of patients from Measure 1A - MU EP with a social services visit, following electronic send of a referral and health information.</p> <p><b>Measure 2B - SS TP:</b> The percentage of patients from Measure 1B - MU EP with a social services visit, following electronic receipt of a referral and health information.</p>
<p>Event <b>3</b></p> <p>Social services communicates the patient's status to the referring provider.</p>	<p><b>Measure 3A - MU EP:</b> The percentage of patients from Measure 2A - MU EP for whom an electronic status report is received.</p> <p><b>Measure 3B - SS TP:</b> The percentage of patients from Measure 2B - MU EP for whom an electronic status report is sent to the referring provider.</p>

### **Rationale for Selection**

The measure set is a starting point for interoperability measurement across MU EPs and SS TPs. As the measurement field advances sophisticated, evidence-based methods to pinpoint the effect of exchange on health information use and patient outcomes, this measure set is intended to serve as a foundation for understanding exchange patterns.

The following factors were considered to develop a measure suitable for SS TPs, given the current landscape of existing measures and metrics, technology capabilities, and policy drivers.

#### **(1) Relationship to Existing Measures:**

Existing measures on information exchange and the social determinants of health do not explicitly focus on outpatient *electronic communication with SS TPs*. Measure developers have developed important measures for patients in inpatient settings, however, they do not explicitly focus on exchange with social services; rather, they permit information exchanged through fax or on paper. In a scan of measures in the public domain, no ambulatory measures track patients reporting exposure to intimate partner violence and financial resource constraint and their referral to social services, as well as the subsequent information exchange between the referring provider and social services.

#### **(2) Readiness to Implement the Measure Set:**

Though technology lags in adoption exist and implementation variance is common, commercially available technologies implemented by MU EPs and SS TPs can generally record and report the measure set's electronic transmission data concepts, namely, the send and receipt of patient information. Limited data exists to determine the level of technology adoption across SS TPs because of their diverse practice settings and personnel diversity, however, it is certain to lag behind providers eligible for financial incentives. Varying levels of technology innovations, often due to lack of funding and resources, leave many social service providers unable to easily improve quality and work processes.<sup>3</sup> Meanwhile, health IT often does not contain all the data required by social service providers.<sup>4</sup> While investment in health IT within the social services domain is growing, there is limited adoption and most exchange is by fax or paper. Some better-funded and more technologically advanced services have Direct messaging and referral capabilities.



### ***(3) Patient Population:***

The measure set focuses on patients who report financial resource constraint and/or intimate partner violence. These categories were selected due to their inclusion in the 2015 ONC Certification Criteria, following the Institute of Medicine’s evaluation of social determinants of health and their representation in health IT. The measure set may be tailored at implementation to evaluate communication trends for other social services needs for which a provider has structured data recording capabilities.

The majority of states require clinicians to report cases of domestic violence to law enforcement; however, research for this measure set found that the regulations in place generally leave reporting gaps for many forms of domestic abuse, and particularly, those now addressed through the 2015 ONC Certification Criteria. A 2010 report funded by the DHHS Administration for Children and Families, Administration on Children, Youth and Families found that a majority of state reporting requirements only applied to injuries caused by weapons or injuries caused through violence and non-accidental actions in violation of criminal laws. Where regulations do require reporting, they include several exceptions and, in some cases, considerable complexity. For example, some regulations do not require reporting for patients over 18, patients who were not incapacitated, or for patients who object to reporting. In some cases, regulations require documentation of the patient’s request for reporting to law enforcement.

The 2015 ONC Certification Criteria adopt four screening questions from the Humiliation, Afraid, Rape, and Kick (HARK) questionnaire, below:

- Within the last year, have you been humiliated or emotionally abused in other ways by your partner or ex-partner?
- Within the last year, have you been afraid of your partner or ex-partner?
- Within the last year, have you been raped or forced to have any kind of sexual activity by your partner or ex-partner?
- Within the last year, have you been kicked, hit, slapped, or otherwise physically hurt by your partner or ex-partner?

As explained in the description of reporting requirements above, affirmative responses to the third question would fall into the category of reporting mandated for criminal activity, and responses to the fourth question would fall into the category of reporting mandated only in instances where criminal activity was involved and/or a weapon was used. Affirmative reports to the first two questions would not require reporting in many states.

Where applicable to intimate partner violence, this measure set’s involvement of social services is proposed to complement reporting to law enforcement, and, indeed, to respond to gaps where reporting excludes emotional abuse and types of physical abuse (those not caused by weapons and/or caused in violation of criminal law).

### ***Feasibility Assessment***

This measure set has overall moderate to high feasibility for SS TPs and MU EPs. See Section 2.3 – Methods for Quantitative Measures for an explanation of the feasibility assessment factors utilized in this report.

Measure 2A – MU EP may not be suitable for measurement on the MU EP “side” of exchange because it measures follow-up with the patient by the SS TP. Measurement may be possible if the MU EP shares an electronic system with the SS TP, or performs retrospective documentation. However, due to the verification requirements of social services data sources, the feasibility assessments for this measure on the MU EP side are lower than for the SS TP.

Despite the availability of the data concepts necessary for measurement, the workflows supporting their routine capture may involve additional work for providers, especially for SS TPs. In the course of a time-constrained patient visit with numerous clinical and reporting demands, many providers do not have the opportunity to screen patients for intimate partner violence and financial resource strain. Further, the electronic send and receipt of health information is becoming more common as the Meaningful Use

program has incentivized these practices and encouraged the adoption of standards that support electronic transmission; however, their documentation for measurement may still prove challenging. For example, electronic transmission could include a referral and summary of care record sent through email or saved to a CD or USB drive. In these instances, a provider must develop the workflows to capture the information and record it in a manner that can be counted for reporting.

**Limitations**

**(1) Measuring Use and Outcomes:**

The measure set presented in this report focuses on process measures with objective data concepts, such as “information received.” This approach was selected given the challenges of measuring outcomes related to exchange and exchanged information use. See Section 5.1 -- Barriers and Lessons Learned for Quantitative Measures for additional analysis on outcomes measurement and this key decision. Measure 3 assesses the percentage of patients for whom the MU TP receives communication back from the SS TP, but does not seek to imply that the communication was received as a result of the initial send in Measure 1.

At this stage of measure specification, it was considered inappropriate to propose a patient outcomes measure in this measure set. While evidence strongly links poor health outcomes to financial resource constraint and intimate partner violence, it is inappropriate to introduce measurement of changes to these social determinants of health or a patient’s other existing health conditions due to a multitude of factors that cannot be well controlled for (for example, the patient’s preferences or abilities to work with social services, and the resources available to a provider to refer to social services and manage the patient’s health).

## 4.4 Patient Generated Health Data (PGHD) Measure Set

**Introduction**

This measure set (Appendix Section 6.5) is developed to measure patient generated health data (PGHD) sent to and incorporated by a Meaningful Use (MU) Eligible Professional (EP).

The measure set presents two measures that follow a patient’s send of information from a device storing PGHD and a MU EP’s incorporation of that information. Figure 6 illustrates the events that correspond to one measure in the set. Data for measurement is derived from the EP’s electronic record system; therefore, there are no measures presented for the PGHD “side” of exchange.

**Figure 6: Measure Set for Patient Generated Health Data Trading Partner – Electronic Information Exchange for Patients with a Clinician-Monitored Condition**

Event <b>1</b>	The MU EP receives PGHD from a patient.	<b>Measure 1 - MU EP:</b> The percentage of unique patients (or authorized representatives) from whom the provider receives at least one electronic delivery of PGHD relevant to a diagnosis on the patient’s current problem list.
Event <b>2</b>	The provider incorporates PGHD in the patient’s record.	<b>Measure 2 - MU EP:</b> The percentage of unique patients from whom the provider incorporates electronically delivered PGHD in the patient’s record at least once.

The measure set is constructed to apply a specific intervention (incorporating PGHD) to a particular patient population (patients with an active problem relevant to the PGHD received), however, it intentionally does not assign a type of PGHD or related active problem at this stage of specification. This

approach allows measure developers and implementers to select the types of PGHD and diagnoses that are most important to clinical users and are supported by evidence.

As currently designed, the measure set counts the first, and first only, receipt and incorporation of PGHD. A patient who routinely sends PGHD to their provider would count only once in the numerator of Measure 1. Patients for whom a provider routinely incorporates PGHD would count only once in the numerator of Measure 2. Based on feedback through testing and implementation, the level of measurement could be modified to focus on the rate of integration for all PGHD received.

### ***Rationale for Selection***

The measure set is a starting point for interoperability measurement across MU EPs and PGHD TPs. As the measurement field advances sophisticated, evidence-based methods to pinpoint the effect of exchange on health information use and patient outcomes, this measure set is intended to serve as a foundation for understanding exchange patterns.

The following factors were considered to develop a measure suitable for PGHD TPs, given the current landscape of existing measures and metrics, technology capabilities, and policy drivers.

#### ***(1) Relationship to Existing Measures:***

No existing clinical quality measures assess information exchange of PGHD and its incorporation into the patient's medical record; however, a related metric has been added to the CMS Meaningful Use program. At the recommendation of the ONC Health IT Policy Committee, CMS adopted the following metric, requiring MU EPs and Eligible Hospitals (EHs)/Critical Access Hospitals (CAHs) participating in Stage 3 of the Meaningful Use program to meet this and other metrics in order to receive incentive payments and avoid penalties:

- PGHD or data from a nonclinical setting is incorporated into the patient record for more than 5 percent of all unique patients seen by the EP or discharged from the EH or CAH inpatient or emergency department during the EHR reporting period.

#### ***(2) Readiness to Implement the Measure Set:***

This measure set has been designed to be "ready" as technologies certified to the ONC 2015 Edition Certification Criterion are implemented and information exchange between patients and MU EPs increases. The 2015 ONC Certification Criteria provide an important opportunity to begin measuring receipt and incorporation of PGHD from patients. Health IT certified to the new criterion (adopted at 45 Code of Federal Regulations 170.315(e)(3)) will support users with the following functionality for patient health information capture:

- Identify, record, and access information directly and electronically shared by a patient (or authorize representative); and
- Reference and link to patient health information documents.

Precise rates of current electronic exchange of PGHD are difficult to determine. PGHD and mobile health data is often facilitated through consumer electronic devices. However, because consumers own most of these devices and wireless carriers such as Verizon and AT&T among others transmit the data, it has been a challenge to capture the movement of health-related data. Even though exact adoption rates are unknown, the market supporting PGHD has gained momentum, with applications, devices, patient portals, kiosks, and secure messaging providing several platforms for patients to manage and transmit their health information. Data captured by PGHD devices, such as wearables, is expected to significantly increase in the coming years.

Commercially available technologies available to MU EPs also support the identification of patients with a specific condition through standardized, structured, and unambiguous codes.

## Feasibility Assessment

This measure set has overall moderate to high feasibility for MU EPs. See Section 2.3 – Method for Quantitative Methods for an explanation of the feasibility assessment factors utilized in this report. The moderate feasibility is applicable to settings without technology capable of recording receipt of PGHD and where providers and/or staff members must record received clinical content. In settings where the technology can perform these actions, the feasibility of the measure set will be higher.

As workflows evolve to increase PGHD incorporation (discussed further below), the measure set will be feasible for measurement in technology certified to ONC 2015 Edition Certification Criteria, primarily due to the new 2015 Edition capability for providers to incorporate PGHD into a patient’s record (as discussed above). Providers without the 2015 Edition implemented may not find all of the functionalities that support this measure set available in their technology for reporting, unless they were added and the reporting fields manually configured. As technology and transmission capabilities advance, this measure’s feasibility will increase for more providers.

The measure set measures providers’ receipt and integration of PGHD, a practice and workflow that is still gaining traction, albeit slowly, as incentives and technology advance communication with patients. There is no widespread practice of incorporating, referencing, or otherwise making use of PGHD in clinical workflow. Faced with the receipt of PGHD, clinicians face the challenges of the time to manually add the information into the patient’s record system, without the ability to document the information as received by a given patient at a given date and time, as well as no overarching regulatory framework that would obligate the clinician to use the PGHD. While some health systems have begun to accept PGHD, they tend to be large integrated delivery systems with technology and patient education resources. In 2012, the ONC Health IT Policy and Health IT Standards Committees conducted a joint hearing on PGHD, which recognized that standards to support the transmission of PGHD are available, yet the primary challenges relate to acceptance of the role PGHD and its sharing from patients to providers.

The feasibility of the measure will vary depending on the mode of transmission (e.g., email transmission of PGHD decreases incorporation feasibility; transmission from an API or app increases feasibility); however, the measure is intentionally agnostic to specific technologies and transmission methods.

The measure set assesses the number of unique patients from whom the provider electronically receives and incorporates PGHD. Note that receive and incorporate *electronically* do not mean the same thing as receive and incorporate *computably*. A user may still have to take action to make electronically received and incorporated information readable, or computable, to the technology (e.g., open an email to discover PGHD and enter the PGHD attributable to the patient who sent the data into the patient record).

## Limitations

### (1) Data Provenance:

One key barrier that hinders providers from incorporating PGHD is data provenance, or the ability for providers, and technology, to track the meta data for information sent from patients. The term “provenance” refers to the origin of clinical information when it is first created. Provenance, which includes information about the source of the data, has the potential to allow a system that aggregates patient information to understand where particular medications and diagnoses in a patient’s record originated. This functionality has significance not only for the ability of a system to segment clinical information based on the source of the information, but also the potential to increase provider trust in information shared by patients.

In collaboration with the ONC Standards and Interoperability (S&I) Framework, HL7 has advanced a standard to support data provenance. The standard is based on the ability to consistently include and convey information on who created the information contained in a CDA document, when was it created, where was it created, how it was created, and why it was created.

For measurement purposes, the identification of duplicated information is critical to avoid calculation errors. Health IT systems must develop the capability to recognize unique content, even if the content has

been received multiple times and stored in different locations. Currently, exchange technologies (CDA, FHIR, V2 messages, X12, etc.) are not capable of conveying the level of specificity required to eliminate duplication concerns. This lack of visibility into uniqueness of content must be addressed to mitigate calculation errors.

***(2) Unidirectional Measurement of Exchange:***

The measure set is limited to assessing the receipt and incorporation of PGHD by MU EPs and is not a bidirectional measure of information exchange. Unfortunately, as the (relatively) new field of PGHD devices and platforms continues to evolve and innovate, there is no standard that enables measurement of the send of PGHD from patients to clinicians. As such, this measure set focuses on the receipt of PGHD, given the functionalities that ONC has advanced for patient health information capture. At present, a measure of the number of patients who send PGHD to a provider may be best measured through a survey or a population level measure through the combination of data from multiple PGHD devices. Data source feasibility considerations have focused this measure on providers' actions.

***(3) Measuring Use and Outcomes:***

The measure set presented in this report focuses on process measures with objective data concepts, such as "information received." This approach was selected given the challenges of measuring outcomes related to exchange and exchanged information use. In addition to the process measures, the measure set presents one measure (Measure 2) that assesses use of PGHD (via incorporation), but refrains from offering a measure that would assess patient outcomes related to PGHD receipt and incorporation. This measure serves as a foundation for understanding the value of exchanged health information from a provider's perspective; however, incorporation, at its best, represents the inference of valuing the information incorporated. The action of incorporating PGHD may be quantitatively measured. However, given the current limitations of measurement derived from health IT data, determining the value of incorporated data is left to qualitative survey measures that can directly query respondents on whether the data was of use or not. At this stage of measure specification, it was considered premature to propose a patient outcomes measure because improvements in a patient's condition are impacted by several factors, one of which may be enhanced electronic communication. The environmental scan did not identify specific examples of PGHD information exchange and improved health outcomes to serve as a base for further development. See Section 5.1 -- Barriers and Lessons Learned for Quantitative Measures for additional analysis on outcomes measurement and this key decision.

Measure 2 assesses the percentage of patients for whom a MU EP incorporates received PGHD. It is a preliminary attempt to contribute to the foundation of currently available methods to evaluate outcomes related to interoperability.



## 5 Discussion and Next Steps

### 5.1 Barriers and Lessons Learned

#### *Survey Measures*

The survey modifications and adjustments have been designed to expand federal, state, and private data collection efforts to address use of exchanged health information between certified and non-certified technology users. While the survey measure analysis and packets are not intended to be used as a compendium of all surveys that query providers on health IT use and exchange, they highlight a sample of surveys that are relevant, in high use, and may be modified to accelerate data collection on these topics. The proposed survey questions and refinements may also serve as a resource to technically assist entities (i.e. states, federal) that plan to develop or expand survey tools. The questions may provide the consistent language needed to develop surveys and/or provide guidance for a consistent way to ask specific questions. It is expected that these questions would undergo future feasibility testing to evaluate their ability to collect the required data from each survey's set of respondents.

#### *Quantitative Measures*

The process of developing methods to measure the use of exchanged health information across users of certified and non-certified technologies produced several important findings.

First, while it is important to measure the value of exchanged health information, health IT's current tools and functionality, generally, do not facilitate this measurement without considerable methodological limitations concerning validity (e.g., does the data truly measure the concept we want to measure?). Health IT functions to assist providers in patient care and operations, not to provide a measurement data source. Interpreting clinical data and audit logs for purposes beyond their express functions will force inference on the use of exchanged health information. For this reason, the measures presented in this report are process measures on the information flow between certified and non-certified technology users. Two survey measures offering refinements and adjustments to surveys currently in use present opportunities to measure the important and subjective value of information exchange. These survey measures are presented in Appendix 5.1 and 5.2.

Second, adoption of health IT – particularly with interoperability functionality – by TPs using non-certified technology will lag behind TPs incentivized by the MU program and using certified technology. Diverse clinical and non-clinical, as well as technical and non-technical, environments for TPs present additional layers of complexity and barriers. TPs have different business drivers, information requirements, and workflows than most primary care and specialty care environments. Not all TPs will have the technology



in place to capture and exchange health information or to collect and provide relevant measurement data. In some cases, TPs may use certified technology; in others, the adoption of technology capable of exchanging standards-based information may be limited or non-existent. Where certified technology is not prevalent, the availability of encoded data vs. free-text content in ad hoc exchange formats may be limited or non-existent, even where the underlying standards support the level of data that can be acted upon by both machines and humans. Where these factors exist, the measure set will be confined to capturing the information that is available through document formats and vocabularies that likely differ. Despite these limitations, the exchange patterns illuminated by the measure sets in this report (electronic exchange occurring, non-electronic exchange occurring, no exchange occurring) can provide insight into localized best practices and functionalities that facilitate information sharing.

Lastly, establishing a direct correlation between exchanged information use and outcomes, such as reductions in cost or duplicate testing, provider and/or patient satisfaction, or health improvements, poses considerable methodological challenges due to several potential confounding factors that cannot be well controlled for (for example, patient treatment preferences, insurance coverage and the cost of care, a patient's severity and response to treatment, and clinical decision making). The limitations to measuring outcomes are addressed within each measure set's preceding section. Advanced methods of measurement may eventually develop evidence-based algorithms that are able to carefully examine large amounts of data to confidently rule out confounding factors and isolate exchange as a contributing factor to improved outcomes.

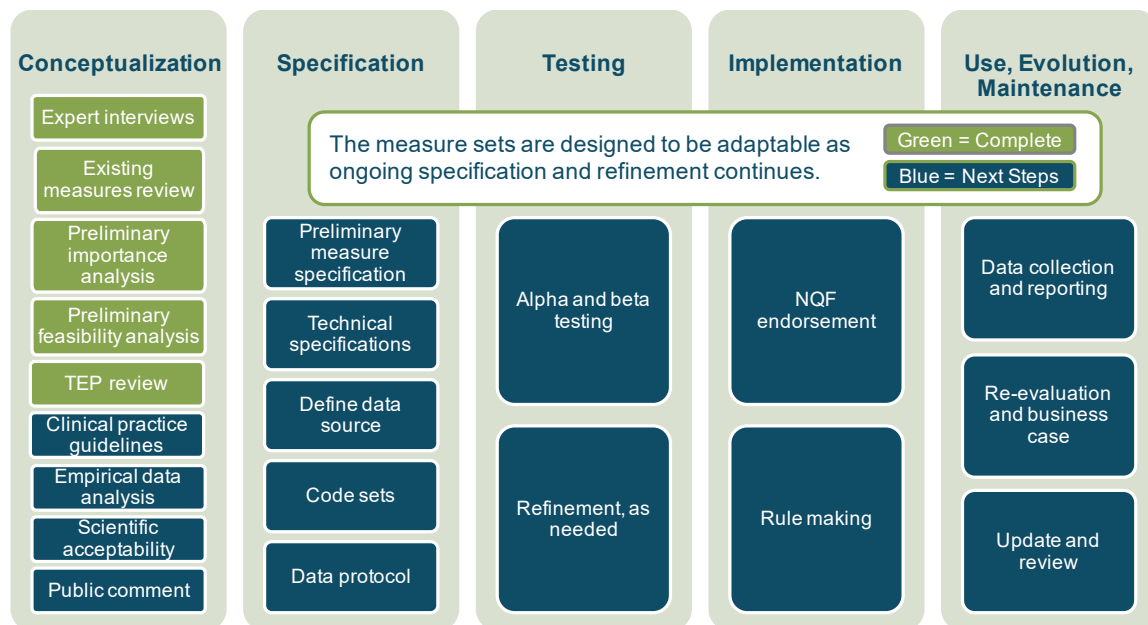
With regard to clinical decision making, the measure sets require careful consideration of the variables that affect a provider's decision to initiate follow-up based on receipt of information. Currently, electronic Clinical Quality Measures use SNOMED-CT codes for "medical or other reason not done" and "patient refusal" to account for reasons why an action was not performed. In further specification and implementation, these codes may be appropriate to facilitate provider discretion over patients who appear in the measure set's calculations.

## 5.2 Next Steps and Other Considerations

### Short-Term Next Steps

The measure sets presented in this report were developed with interoperability and measurement experts and guided by the ASPE ONC Measurement of Interoperable Electronic Health Records Utilization TEP, with experts in each TP domain, interoperability, and measurement. Following conceptualization and preliminary specification, the measure sets are proposed here for continuation along the Measure Life Cycle process, as defined by the steps in Version 11.2 of the CMS Measures Management System Blueprint (the Blueprint), represented in Figure 7.

Figure 7: Life Cycle Status of Trading Partner Measure Set



The measure sets' specification level is intentionally drafted with flexibility and adaptability in mind for TPs' nascent technology standards and interoperability workflows. Overall for the TPs studied in this report, the rates of technology adoption and use lags behind those of providers incentivized by the MU Program. It is important to acknowledge that TPs' adoption lags behind those who are eligible for financial incentives. However, advancing the measure sets for further specification and implementation will contribute to the overall understanding of technology barriers and exchange trends, as well as highlight where best practices and successful exchange patterns may help accelerate adoption and exchange.

The measure sets' introduction at this specific point in time should encourage clinicians, TPs, standards development organizations and other stakeholders to begin interoperability measurement now in order to capture accelerating trends and spread best practices. Where some TP populations have more advanced technology adoption, measurement can provide lessons learned for the TP populations at earlier technology stages.

Testing and specification as eMeasures are important next steps. Specifically, alpha-testing may identify areas where standards are required in technology developed for TPs. If these areas are identified early and before widespread technology adoption, there is an opportunity to discover efficiencies in the standards development and implementation process and thus, enable exchange more quickly. Specifically, there is an opportunity to develop standards that track and report interoperability for TPs and incorporate these standards into technology development before widespread adoption.

It is expected that alpha testing will accumulate knowledge on the additional areas below that may require more granular definition in future specifications:

**(1) Data concepts for relevant patient populations:** The measure sets present numerical counts (e.g., one or more) and/or general conditions (e.g., a chronic condition) that qualify patients for the initial patient population and denominator. In the course of further specification, specific diagnoses may emerge as critical conditions to co-manage through information exchange, or, it may be determined that expanding the measure to include additional counts will provide a more actionable metric. If these modifications are made, the following criteria should be considered: (1) the condition must be one that warrants treatment by a TP (not the TP using certified technology), thereby creating the need for communication between two settings; (2) the condition must have an assessment tool that is commonly used by both TPs for initial diagnosis and ongoing patient monitoring; and (3) the assessment tool and/or the condition's value set should facilitate "before and after" comparison that health IT and reporting systems can compute to indicate improvement, stabilization, and decline. As specification evolves, it is expected that more precise indications of improvement, stabilization, and decline would be identified through thorough review of the scientific and medical literature.

**(2) Format of health information exchanged between certified and non-certified technology users:** The measure sets are agnostic to the specific information exchanged in order to allow alpha testing to determine what information should be defined in ongoing specification. For example, the measures could count a C-CDA as information exchange, or they could look further for the Common Clinical Data Set to be present in exchange in order to populate the measure. The C-CDA standard is evolving. The standard that started out as the HL7 v1.0 standard is now in v2.1 balloting – providing additional guidance on use of document templates and metadata. As such, the measure sets are defined at a flexible specification stage to support advancements by standards development organizations and the industry to provide meaningful measurement. Other more appropriate standards and information identification techniques may emerge and be suitable for the measure set.

**(3) Transmission methods for information exchange between certified and non-certified technology users:** As currently drafted, the measure sets are flexibly designed to permit manual transmission of an electronic document (such as a C-CDA document sent via email or carried on a USB drive), as well as electronic transmission of an electronic document (such as a C-CDA document sent through Direct or transmitted via an HIE). At this stage of specification, the measure sets are purposefully agnostic to transmission methods, but alpha testing is expected to identify the standards and transmission modes that best facilitate information exchange. As mentioned above, other more appropriate standards and information identification techniques may emerge and be suitable for the measure set.

**(4) Data concept refinement for "transition of care" and "other relevant events:"** The measure set is designed to maximize a clinician's flexibility to determine what clinical events warrant exchange with a TP for a given patient. In alpha testing and eMeasure specification, it is expected that the methods that (1) produce the least workflow interference and (2) result in the most confidence in the measure's level of specification will emerge and can be adopted into the final measure. For example, a future iteration of a measure set could define the precise value sets for specific conditions or changes to a patient's record that trigger inclusion in the measure's denominator. If this method proved too constraining and left out relevant events and patients, the measure's specification level could be broadened to capture a larger denominator. In this scenario, thorough scrutiny would be required to ensure the measure only captured patients and events belonging in the measure.

**(5) Feasibility:** As technology and workflows evolve, it is expected that data capture and reporting will improve. For example, the measure sets assess health information sent and received electronically. However, "sent" and "received" electronically do not mean the same thing as "sent" or "received" computably, because a user may still have to take action (e.g., open an email to discover a summary of care record) to make the information readable for the technology. As technology advancements yield more automatically computable data concepts, provider burden will decrease and feasibility will improve.

**(6) Level of measurement:** As currently designed, the measure sets depict a patient level of measurement, meaning that the measures assess the percentage of patients for which specific actions occur (e.g., the number of patients for whom health information was transmitted). Through further specification and testing, it may be determined that the level of measurement should be modified to focus each measure on the number of transactions that occur or the number of providers with patients for whom the numerator actions have occurred. For example, a provider level of measurement could produce actionable metrics for clinicians, administrators, and potentially payers in incentive programs if the measures were modified to evaluate the percentage of TPs that performed a specific action (e.g., transmitted patient health information to another TP). A population level of measurement could take many forms, but in essence, would produce information about the flow of information across a network of providers, or nodes. See Section 2.5 – Measurement Scope for more information on a guiding framework for different levels of measurement.

### **Long-Term Next Steps**

In addition to short term next steps, this project generated long-term potential opportunities to expand measures with ancillary data sources, including claims data. Claims data may have the potential to expand measures to provide information that providers and/or patients may not have available. In other cases, interoperability measures that link to claims data may assist clinicians and researchers in identifying where to find missing clinical data when patients receive care outside of a specific provider’s setting. A recent study found, for example, significant gaps in information on behavioral health patients’ outpatient visits, acute psychiatric services, and study diagnoses that were housed in a different record system.<sup>5</sup>

Specifically, claims data may be used to map a network of providers who share patients and facilitate an extensive analysis of interoperability practices. This measurement method was recently encouraged by the American Medical Informatics Association response to the ONC Request for Information on Interoperability Measurement under MACRA.<sup>6</sup> Further, this approach would allow for subset analysis based on the degree to which providers have adopted certified technology. By quantifying information from claims data for example, information can be gained on the number of providers a patient has visited over a determined timeframe. The limits of claims data, namely, that not all patients will have claims, inevitably leave gaps in this approach. However, claims data represent a potential common thread that reveals the levels of exchange between the various groups touching the patient.

Medicare and Medicaid data can be used to assess services delivered to a given patient, in addition to claims information to identify providers treating that patient. This joint level of analysis could be layered upon an interoperability assessment to determine if information about services delivered is exchanged. This approach may provide another avenue to explore the flow of information and, potentially, its value. Data from expansive clinician and claims data sets (such as the SK&A physician database, All-Payer Claims Database, Optum, Truven Health Analytics, and IMS Health) could be examined for a merge to observe linkages between patients and providers to fully understand the provider network.

### **Other Considerations**

As noted in the short-term next steps above, the quantitative measure sets in this report are suggested for continuation along the Measure Life Cycle process. Specifically, alpha-testing and eMeasure specification are suggested to identify areas where standards are required in technology developed for TPs and where the specifications should take on more detail and refinement (e.g., value sets, specific conditions, logic, etc.). The enhancements to existing surveys are proposed for addition and testing to expand data collection on the use of exchanged health information.

Beyond the short-term next steps and the long-term suggestion to leverage network analyses and claims data, the following policy considerations are offered for the nation’s interoperability measurement strategy:

1. Measurement strategies must be extended to include TPs who were not incentivized by the MU Program.
2. The measurement strategy must consider the range of TPs' technical sophistication and the pathways by which market forces may try to meet their needs (e.g. health IT vendors may provide portal services to social service providers to enable information exchange), or measures should be agnostic to the technological solutions that are adopted to assure communication.
3. Measurement goals should be clearly identified. For example, is the goal to determine if the use of a specific standard (e.g. LOINC) is spreading, or is it intended to determine if providers are sharing more data with, for example, social service providers nationally, or is it intended to demonstrate increased sharing of information between competing health providers?
4. Measures that attempt to link increased interoperability with improved outcomes must consider the broad range of sets of clinical conditions that occur in the healthcare system and the fact that even for prevalent diseases it takes years of population data to attribute an outcome to an intervention.
5. The use of interoperability measurement to assess provider quality should be delayed until a greater understanding of optimal clinical communications practice has been achieved. More communication is not necessarily better communication and can easily result in unintended consequences.



## 6 Appendices: Measure Specifications

### 6.1 Survey Measure: Adjustments

Suggested *adjustments to existing questions* in surveys that currently query respondents on exchange partners and/or information exchanged.

**Appendix 6.1 Table A: Survey Measure Adjustments**

Survey	Level	Current Question	Suggested Adjustments
2014 Minnesota Health Information Technology (HIT) Local Public Health Survey	State	#5. Does your local health department electronically receive health information with any of the organizations listed below? (Please check all that apply.)	<p>Include the following trading partners to the list of organizations respondents may select:</p> <ul style="list-style-type: none"> <li>• Behavioral health</li> <li>• Care planning and management</li> <li>• Patient devices and applications</li> <li>• Social services agencies</li> </ul> <p>Include ability for respondents to indicate what of the following information is received:</p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> </ul>
2014 Minnesota Health Information Technology (HIT) Local Public Health Survey	State	#6. Does your local health department electronically send health information with any of the organizations listed below? (Please check all that apply.)	Same suggestion as above, with reference to “send.”



Survey	Level	Current Question	Suggested Adjustments
2014 Minnesota Health Information Technology (HIT) Local Public Health Survey	State	#7. With which partners do you have the greatest need to electronically receive health information from? (Please check top 5 priorities.)	Same suggestion as above, with reference to “receive.”
2014 Minnesota Health Information Technology (HIT) Local Public Health Survey	State	#8. With which partners do you have the greatest need to electronically send health information from? (Please check top 5 priorities.)	Same suggestion as above, with reference to “send.”
2011 Minnesota Licensed Nursing Homes and Certified Boarding Care Homes Assessment of EHR Adoption and Use and Health Information Exchange	State	<p>#15. Indicate the status of your facility’s ability to electronically send information to partners:</p> <ul style="list-style-type: none"> <li>• Electronically sending information</li> <li>• Not electronically sending information but plan to in the next 18 months</li> <li>• Not electronically sending information with no plans to be in the next 18 months</li> <li>• Do not know</li> </ul> <p><i>List includes behavioral /mental health; Question #19 addresses patient data.</i></p>	<p>Include the following trading partners to the list of organizations respondents may select:</p> <ul style="list-style-type: none"> <li>• Care planning and management</li> <li>• Social services agencies</li> </ul> <p>Include ability for respondents to indicate what of the following information is sent:</p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> </ul>
2011 Minnesota Licensed Nursing Homes and Certified Boarding Care Homes Assessment of EHR Adoption and Use and Health Information Exchange	State	<p>#16. Indicate the status of your facility’s ability to electronically receive information from partners:</p> <ul style="list-style-type: none"> <li>• Electronically receiving information</li> <li>• Not electronically receiving information but plan to in the next 18 months</li> <li>• Not electronically receiving information with no plans to be in the next 18 months</li> <li>• Do not know</li> </ul>	<p>Include the following trading partners to the list of organizations respondents may select:</p> <ul style="list-style-type: none"> <li>• Care planning and management</li> <li>• Patient devices and applications</li> <li>• Social services agencies</li> </ul> <p>Include ability for respondents to indicate what of the following information is received:</p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> </ul>

Survey	Level	Current Question	Suggested Adjustments
2011 Minnesota Licensed Nursing Homes and Certified Boarding Care Homes Assessment of EHR Adoption and Use and Health Information Exchange	State	#17. Indicate the type of information your facility would like to receive electronically (check all that apply): List includes <ul style="list-style-type: none"> <li>• Clinical/summary care record</li> <li>• Current/active medication list</li> <li>• Medical history and physical</li> </ul>	Include the ability for respondents to indicate from which trading partners they would like to receive information from: <ul style="list-style-type: none"> <li>• Behavioral health</li> <li>• Care planning and management</li> <li>• Patient devices and applications</li> <li>• Social services agencies</li> </ul> This may involve combining with Question #18 (With which partners do you have the greatest need to electronically exchange information with? (check top five)) Include the ability for respondents to also select medication allergy list.
2011 Minnesota Licensed Nursing Homes and Certified Boarding Care Homes Assessment of EHR Adoption and Use and Health Information Exchange	State	#19. Indicate which methods your facility uses to provide residents and/or residents' family with electronic access to their health information (select all that apply): <ul style="list-style-type: none"> <li>• PHR</li> <li>• Flash drive, USD drive, or CD</li> <li>• Portal access with the internet</li> <li>• Secure email</li> <li>• Do not provide electronic access</li> <li>• Do not know</li> <li>• Other</li> </ul>	Combine Question #19 and #20 to allow respondents to indicate what information is provided via each method.
2011 Minnesota Licensed Nursing Homes and Certified Boarding Care Homes Assessment of EHR Adoption and Use and Health Information Exchange	State	#20. If using portal access with the internet to provide residents and/or residents' families with electronic access to their health information, indicate the type of information (select all that apply): List includes <ul style="list-style-type: none"> <li>• Diagnosis/Problem List</li> <li>• Medication History</li> </ul>	Add medication allergy list and summary of care record to the list of health information available to select; consider broadening beyond portal access and combining with Question #19.

Survey	Level	Current Question	Suggested Adjustments
2015 Minnesota HIT Ambulatory Clinic Survey	State	<p>#40. For each of the following types of health providers/organization, indicate if your clinic needs to send and/or receive clinical health information. Then for each type of organization with which you need to exchange, indicate what types of information you electronically exchange. Select all types of information that apply for each provider.</p> <p><i>List of providers includes behavioral health, social service agencies/organizations. Patient data is addressed in Question #52.</i></p> <p><i>Types of information include summary of care record and medication history.</i></p>	<p>Include the following trading partner to the list of organizations respondents may select:</p> <ul style="list-style-type: none"> <li>Care planning and management</li> </ul> <p>Add the following information to the types of information exchanged:</p> <ul style="list-style-type: none"> <li>Problem list</li> <li>Medication allergy list</li> </ul> <p>Separate questions for send and receive.</p> <p>Adapt the checkbox for “clinic has a need to send or receive health information” to a question indicating the importance of receiving each type of health information and from each trading partner.</p>
2015 Minnesota HIT Ambulatory Clinic Survey	State	<p>#41. For each type of clinical information received electronically from providers or sources outside your health system/organization, how do you usually integrate the information into your EHR? Select one method for each type of information.</p> <p>Types of information include summary of care record and medication history.</p>	<p>Add the following information to the types of information received:</p> <ul style="list-style-type: none"> <li>Problem list</li> <li>Medication allergy list</li> </ul>
2015 Minnesota HIT Ambulatory Clinic Survey	State	<p>#51. Does your clinic offer an online patient portal?</p>	<p>Expand question to address other types of patient data devices and applications.</p>
2015 Minnesota HIT Ambulatory Clinic Survey	State	<p>#52: Indicate the features or functionalities available to the patients through the patient portal? (select all the apply)</p> <p>List includes diagnosis/problem list, medication list, allergies list.</p>	<p>Add the following information to the types of information available:</p> <ul style="list-style-type: none"> <li>Summary of care record</li> </ul>

Survey	Level	Current Question	Suggested Adjustments
Behavioral Health Information Technologies Survey	Federal	<p>#6. Do grant-funded program staff electronically exchange Patient Health Information Summaries among a network of providers in order to coordinate individual patient care?</p>	<p>Add a list of providers to allow respondents to identify who they exchange information with and include:</p> <ul style="list-style-type: none"> <li>• Behavioral health</li> <li>• Care planning and management</li> <li>• Patient devices and applications</li> <li>• Social services agencies</li> </ul> <p>Add the following information to the types of information exchanged:</p> <ul style="list-style-type: none"> <li>• Problem list</li> <li>• Medication list</li> <li>• Medication allergy list</li> </ul> <p>Separate questions for send and receive.</p>
Testing Experience and Functional Tools (TEFT) PHR Planning and Implementation Assessment Tool: HIT Environmental Scan	Federal	<p>State HIT Infrastructure Question #4: What types of providers currently participate in the HIE? Select all that apply. Please indicate the total number of participants by type of provider or organization.</p> <p><i>List includes Behavioral Health.</i></p>	<p>Include the following trading partners to the list of organizations respondents may select:</p> <ul style="list-style-type: none"> <li>• Care planning and management</li> <li>• Patient devices and applications</li> <li>• Social services agencies</li> </ul>
Testing Experience and Functional Tools (TEFT) PHR Planning and Implementation Assessment Tool: HIT Environmental Scan	Federal	<p>State HIT Infrastructure Question #6: What types of services are/will be available through the HIE organization(s)?</p> <p><i>List includes Personal Health Record.</i></p>	<p>Include the following service to the list of types of services/communications available:</p> <ul style="list-style-type: none"> <li>• Patient devices and applications</li> </ul>
Testing Experience and Functional Tools (TEFT) PHR Planning and Implementation Assessment Tool: HIT Environmental Scan	Federal	<p>State HIT Infrastructure Question #8: What types of data are/will be available through the HIE organizations?</p> <p><i>List includes Pharmacy, Disease Management, Patient-Centered Plan.</i></p>	<p>Include ability for respondents to indicate if the following information is available:</p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> </ul>

Survey	Level	Current Question	Suggested Adjustments
Testing Experience and Functional Tools (TEFT) PHR Planning and Implementation Assessment Tool: HIT Environmental Scan	Federal	State HIT Infrastructure Question #10: Who has access to MMIS (Medicaid Management Information Systems)?  <i>List includes Care/Case Mangers, Acute Care Providers and Other Healthcare Providers.</i>	Include the following trading partners to the list of organizations respondents may select: <ul style="list-style-type: none"> <li>• Behavioral health</li> <li>• Social services agencies</li> </ul>
Medical Group Management Association Center for Research (MGMA CFR): Assessing Adoption of Effective Health Information Technology Questionnaire	Private	#15. Rate each of the following EHR features on its potential benefits to your practice.  <i>List includes improved patient communications, reduced medical records transportation cost, reduced medical records storage cost, and reduced medical records staff expenses.</i>	<ul style="list-style-type: none"> <li>• Include among the benefits of EHR the selection of improved communications with:</li> <li>• Behavioral health</li> <li>• Care planning and management</li> <li>• Patient devices and applications</li> <li>• Social services agencies</li> <li>•</li> </ul>
Medical Group Management Association Center for Research (MGMA CFR): Assessing Adoption of Effective Health Information Technology Questionnaire	Private	#20. How do your practice's physicians communicate with patients outside of the office?  <i>List includes telephone, fax, letter, and email.</i>	Consider broadening to including patient devices and applications (e.g., application, PHR, portal)
2014 AHA Annual Survey Information Technology Supplement Health Forum, L.L.C.	Private	#1. Does your hospital currently have a computerized system which allows for:  Care Summary Documents – Response C: Send summary of care records to an unaffiliated organization using a different certified EHR vendor	Consider broadening response C to 'different IT software/system or outside system' alongside the different certified EHR vendor.

Survey	Level	Current Question	Suggested Adjustments
2014 AHA Annual Survey Information Technology Supplement	Private	<p>#4. Which of the following patient data does your hospital electronically exchange/share with one or more of the provider types listed below? (Check all that apply)</p>	<p>Expand question to include ‘providers or sources’ rather than ‘one or more of the provider types’.</p> <p>Expand the response categories to include ‘other’ and allow providers to identify the specific information exchanged, including the types below:</p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> </ul> <p>Expand the response columns to include the following trading partners:</p> <ul style="list-style-type: none"> <li>• Behavioral health</li> <li>• Care planning and management</li> <li>• Patient devices and applications</li> <li>• Social services agencies</li> </ul>
HINTS 5 Questionnaire Draft 2016	Federal	<p>#D3. Within the last 12 months, have you requested that your medical record be sent electronically –that is, by computer or other device - to another health care provider? Electronic does not include telephone, mail or fax.</p> <p>Check: Yes/No</p>	<p>Expand this question to include the following trading partners:</p> <ul style="list-style-type: none"> <li>• Behavioral health</li> <li>• Care planning and management</li> <li>• Patient devices and applications</li> <li>• Social services agencies</li> </ul>



Survey	Level	Current Question	Suggested Adjustments
HINTS 5 Questionnaire Draft 2016	Federal	#D15. Have you electronically sent your medical information to any of the following?	<p>Expand this question to include the following trading partners.</p> <ul style="list-style-type: none"> <li>Behavioral health</li> <li>Care planning and management</li> <li>Patient devices and applications</li> <li>Social services agencies</li> </ul> <p>Expand this question to ask respondents what type of information was electronically sent and include the following categories:</p> <ul style="list-style-type: none"> <li>Summary of care document</li> <li>Problem list</li> <li>Medication lists</li> <li>Medication allergy list</li> </ul>
National Electronic Health Records Survey 2016 (NCHS)	Federal	<p>#24. Do you refer patients to the following providers? If so, how do you send patient health information to them? Electronic does not include fax, eFax, or mail.</p> <p><i>List includes behavioral health.</i></p>	<p>Expand to include additional trading partners within the question and the response column.</p> <ul style="list-style-type: none"> <li>Care planning and management</li> <li>Patient devices and applications</li> <li>Social services agencies</li> </ul>
National Electronic Health Records Survey 2016 (NCHS)	Federal	#25. Do you see patients from the following providers? If so, how do you receive patient health information from them? Electronic does not include fax, eFax, or mail.	<p>Expand this question to include trading partners.</p> <ul style="list-style-type: none"> <li>Behavioral health</li> <li>Care planning and management</li> <li>Patient devices and applications</li> <li>Social services agencies</li> </ul> <p>Add the following information to the types of information received:</p> <ul style="list-style-type: none"> <li>Summary of care document</li> <li>Problem list</li> <li>Medication lists</li> <li>Medication allergy list</li> </ul>

Survey	Level	Current Question	Suggested Adjustments
National Electronic Health Records Survey 2016 (NCHS)	Federal	#30. For providers outside of your medical organization, do you electronically send and receive, send only, or receive only the following types of patient health information?	Expand question to query respondents on the types of information they would like to send and receive and how they use the information. <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> </ul>
CAHPS Clinician and Group Surveys: Supplemental Items for Adult Surveys 2.0 – HIT Supplement	Federal	#19. Visit notes sum up what was talked about on a visit to a provider’s office. Visit notes may be available on paper, on a website, or by e-mail. In the last 12 months, did this provider’s office offer you visit notes?  #20. In the last 12 months, how did this provider’s office offer you the visit notes? Mark one or more.  <i>Responses include: On paper; on a website; by email; some other way.</i>	Expand questions to allow respondents to answer about the following types of information: <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> </ul>

## 6.2 Survey Measure: Refinements

Suggested *new questions* to surveys that do not query respondents on exchange partners and/or information exchanged. The wording provided is for example only; survey owners would have the discretion to revise and expand how the question and responses are framed, while retaining the minimum content proposed.

Appendix 6.2 Table A: Survey Measure: Refinements

Question	Survey
<p><b>#1. Do you electronically send the health information listed below to any of the following trading partners:</b></p> <ul style="list-style-type: none"> <li>• Behavioral health providers</li> <li>• Care planning and management</li> <li>• Patient devices and applications (e.g., application, PHR, portal)</li> <li>• Social services</li> <li>• Other</li> </ul> <p>(Please check all that apply and indicate to which trading partner)</p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> <li>• Other</li> <li>• Do not send health information</li> </ul>	<p>Federal:</p> <ul style="list-style-type: none"> <li>• HINTS 5 Questionnaire Draft 2016</li> </ul> <p>State:</p> <ul style="list-style-type: none"> <li>• Rhode Island Health Care Quality Performance Program: Physician Health Information Technology Survey</li> </ul> <p>Private:</p> <ul style="list-style-type: none"> <li>• KLAS 2016 Interoperability Tool</li> <li>• Village Annual Members Survey (adapt for patient perspective)</li> <li>• Medical Group Management Association Center for Research: Assessing Adoption of Effective Health Information Technology Questionnaire</li> <li>• Community Clinics Initiative: 2005 Information Management Assessment – Medical Director Survey</li> <li>• Community Chronic Care Network</li> </ul>
<p><b>#2. Do you electronically receive the health information listed below from any of the following trading partners:</b></p> <ul style="list-style-type: none"> <li>• Behavioral health providers</li> <li>• Care planning and management</li> <li>• Patient devices and applications (e.g., application, PHR, portal)</li> <li>• Social services</li> <li>• Other</li> </ul> <p>(Please check all that apply and indicate from which trading partner)</p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> <li>• Other</li> <li>• Do not receive health information</li> </ul>	<p>Federal:</p> <ul style="list-style-type: none"> <li>• HINTS 5 Questionnaire Draft 2016</li> </ul> <p>State:</p> <ul style="list-style-type: none"> <li>• Rhode Island Health Care Quality Performance Program: Physician Health Information Technology Survey</li> </ul> <p>Private:</p> <ul style="list-style-type: none"> <li>• KLAS 2016 Interoperability Tool</li> <li>• Village Annual Members Survey (adapt for patient perspective)</li> <li>• Medical Group Management Association Center for Research: Assessing Adoption of Effective Health Information Technology Questionnaire</li> <li>• Community Clinics Initiative: 2005 Information Management Assessment – Medical Director Survey</li> <li>• Community Chronic Care Network</li> </ul>

Question	Survey
<p><b>#3. How important is it to receive the health information listed below from any of the following trading partners:</b></p> <ul style="list-style-type: none"> <li>• Behavioral health providers</li> <li>• Care planning and management</li> <li>• Patient devices and applications (e.g., application, PHR, portal)</li> <li>• Social services</li> <li>• Other</li> </ul> <p>(Please indicate importance for all that apply and indicate from which trading partner)</p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> <li>• Other</li> </ul>	<p>Federal:</p> <ul style="list-style-type: none"> <li>• Behavioral Health Information Technologies Survey</li> <li>• CAHPS Clinician and Group Surveys: Supplemental Items for Adult Surveys 2.0 – HIT Supplement (adapt for patient perspective)</li> <li>• HINTS 5 Questionnaire Draft 2016</li> </ul> <p>State:</p> <ul style="list-style-type: none"> <li>• Rhode Island Health Care Quality Performance Program: Physician Health Information Technology Survey</li> </ul> <p>Private:</p> <ul style="list-style-type: none"> <li>• Village Annual Members Survey (adapt for patient perspective)</li> <li>• Medical Group Management Association Center for Research: Assessing Adoption of Effective Health Information Technology Questionnaire</li> <li>• Community Clinics Initiative: 2005 Information Management Assessment – Medical Director Survey</li> <li>• Community Chronic Care Network</li> </ul>

Question	Survey
<p><b>#4. If you receive the health information listed below, how do you use it?</b></p> <ul style="list-style-type: none"> <li>• Summary of care document</li> <li>• Problem list</li> <li>• Medication lists</li> <li>• Medication allergy list</li> <li>• Other</li> </ul>	<p>Federal:</p> <ul style="list-style-type: none"> <li>• Behavioral Health Information Technologies Survey</li> <li>• CAHPS Clinician and Group Surveys: Supplemental Items for Adult Surveys 2.0 – HIT Supplement (adapt for patient perspective)</li> <li>• HINTS 5 Questionnaire Draft 2016</li> </ul> <p>State:</p> <ul style="list-style-type: none"> <li>• 2014 Minnesota Health Information Technology (HIT) Local Public Health Survey</li> <li>• 2011 Minnesota Licensed Nursing Homes and Certified Boarding Care Homes Assessment of EHR Adoption and Use and Health Information Exchange</li> <li>• 2015 Minnesota HIT Ambulatory Clinic Survey (make this question open-ended to pair with Question #41: For each type of clinical information received electronically from providers or sources outside your health system/organization, how do you usually integrate the information into your EHR? Select one method for each type of information.)</li> <li>• Rhode Island Health Care Quality Performance Program: Physician Health Information Technology Survey</li> </ul> <p>Private:</p> <ul style="list-style-type: none"> <li>• KLAS 2016 Interoperability Tool</li> <li>• Village Annual Members Survey (adapt for patient perspective)</li> <li>• Medical Group Management Association Center for Research: Assessing Adoption of Effective Health Information Technology Questionnaire</li> <li>• Community Clinics Initiative: 2005 Information Management Assessment – Medical Director Survey</li> <li>• Community Chronic Care Network</li> </ul>

## 6.3 Behavioral Health Measure Set

### *Change in Condition following Electronic Information Exchange*

#### *Introduction*

This measure set is developed to measure electronic exchange between a behavioral health (BH) trading partner (TP) and a Meaningful Use (MU) Eligible Professional (EP) for the treatment and monitoring of a patient with a behavioral health condition and a chronic condition.

#### *Measure Set*

The events that initiate each exchange between a BH TP and MU EP are described in the graphic below. Each event corresponds to one measure intended for data derived from an MU EP’s electronic record system and a separate measure intended for data derived from the BH TP’s electronic record system.

**Appendix 6.3 Figure A: Behavioral Health Measure Set**

<p>Event <b>1</b></p>	<p>A patient with behavioral health and chronic conditions has a transition of care and/or other relevant clinical event.</p>	<p><b>Measure 1A - MU EP:</b> The percentage of patients with a behavioral health and a chronic condition with electronic patient health information sent to a behavioral health provider. <b>Measure 1B - BH TP:</b> The percentage of patients with a behavioral health and a chronic condition with electronic patient health information received.</p>
<p>Event <b>2</b></p>	<p>The patient receives follow-up care by the behavioral health specialist.</p>	<p><b>Measure 2A - MU EP:</b> The percentage of patients from measure 1A with follow-up care, following electronic send of patient information. <b>Measure 2B - BH TP:</b> The percentage of patients from measure 1B with follow-up care, following electronic receipt of patient information.</p>
<p>Event <b>3</b></p>	<p>The behavioral health specialist communicates patient status to the referring provider.</p>	<p><b>Measure 3A - MU EP:</b> The percentage of patients from Measure 2A for whom electronic patient health information is received. <b>Measure 3B - BH TP:</b> The percentage of patients from Measure 2B for whom electronic summary of care record is sent to the referring provider.</p>
<p>Event <b>4</b></p>	<p>The patient is monitored by both providers for a change in the behavioral health condition.</p>	<p><b>Measure 4A - MU EP:</b> The percentage of patients from Measure 3A whose depression status improved. <b>Measure 4B - BH TP:</b> The percentage of patients from Measure 3B whose depression status improved.</p>

Measure 2A – MU EP and 2B – BH TP are proxy measures for use of exchanged health information, and Measure 4A – MU EP and 4B – BH TP are proxy measures for improved health outcomes following information exchange with a behavioral health provider. These measures represent extensions of Measures 1A – MU EP and 1B – BH TP, and 3A – MU TP and 3B – BH TP, respectively.

**This measure set does not seek to assert that a relationship between health information exchange and improved incomes will exist; rather, it provides a starting point to measure electronic information exchange trends that may assist future measure developers and researchers.** To date, peer-reviewed literature has struggled to prove a causal relationship between information exchange and improved health outcomes, although positive relationships have been observed. Myriad factors influence behavioral health referrals, including shortages and access to specialists and the patient’s preference for treatment.



There are also numerous factors that influence improved health outcomes outside of the processes that occur between providers.

### Feasibility Assessment

Each measure in the set is presented with a more detailed feasibility assessment for its individual components.

This measure set has **overall moderate to high feasibility for BH TPs and MU EPs**, with the exceptions of (1) Measures 3A – MU EP and 3B – BH TP, which require report calculation logic and a data concept that likely involve the manual verification of a summary of care recipient in Measures 1A – MU EP and 1B – BH TP; and (2) Measure 2A – MU EP, which would require data obtained from the BH TP’s electronic records system.

### Estimated Reporting Period

An estimated minimum two-year reporting period is proposed to capture trends surrounding information exchange and changes in health outcomes.

Terms:

- Initial Patient Population (IPP): The group of patients or actions the measure is designed to measure
- Denominator: A narrowed subset of patients or actions from the IPP (may be the same as the IPP)
- Numerator: The patients or actions from the denominator for whom or for which the measure’s process or outcome occurs

**Appendix 6.3 Table A: Related Measures**

Measure Title	Measure Description	Measure Steward
Adult depression in primary care	Percentage of patients with major depression or persistent depressive disorder whose primary care records show documentation of any communication between the primary care clinician and the mental health care clinician	Institute for Clinical Systems Improvement (ICSI)
Major depressive disorder (MDD)	Percentage of medical records of patients aged 18 years and older with a diagnosis of MDD and a specific diagnosed comorbid condition (diabetes, coronary artery disease, ischemic stroke, intracranial hemorrhage, chronic kidney disease [stages 4 or 5], ESRD or congestive heart failure) being treated by another clinician with communication to the clinician treating the comorbid condition	American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI)

Notes on Related Measures:

- The table above excludes measures ONLY assessing:
  - Encounters following a transition of care for behavioral health patients;
  - Patients who are screened for behavioral health conditions;
  - Patients having follow-up encounters for ongoing monitoring and management;
  - Patients with a change in condition;
  - Additionally, measures based on survey data and inpatient measures were excluded.

## Event 1: A patient with a behavioral health condition and a chronic condition is referred for treatment by a behavioral health specialist

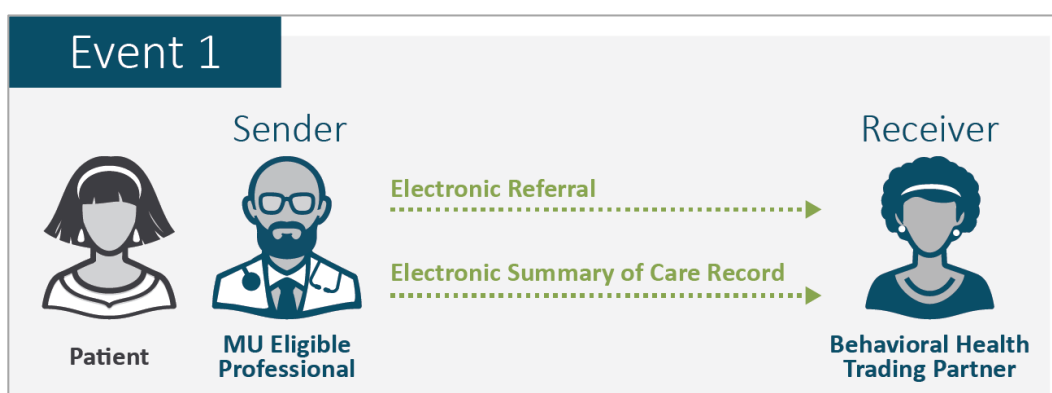
### Measure 1A – Meaningful Use Eligible Professional

The percentage of patients with a behavioral health and a chronic condition with an electronic referral and summary of care record sent to a behavioral health provider.

### Measure 1B – Behavioral Health Trading Partner

The percentage of patients with a behavioral health and a chronic condition with an electronic referral and summary of care record received.

Appendix 6.3 Figure B: Event 1



### Initial Patient Population (IPP) Statement

Unique patients 18 years and older.

Appendix 6.3 Table B: IPP Data Concepts

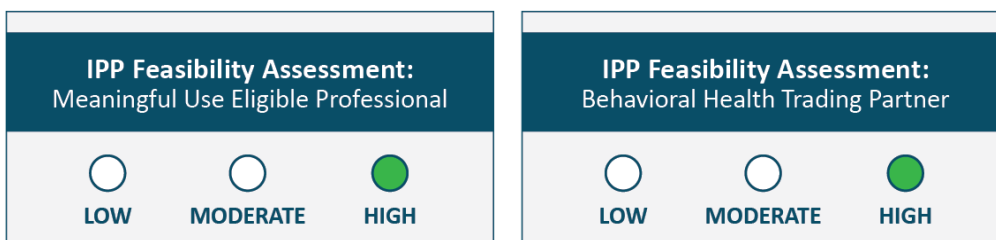
Data Concept: 1. Unique patient, CEHRT<sup>7</sup>: Yes; 2. Patient age, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
Meaningful Use Eligible Professional	Patient record or scheduling system	Routine capture at patient registration	Predominantly electronic; some paper
Behavioral Health Trading Partner	Patient record system: problem list OR received summary of care record	Routine capture at patient visit; less routine capture if the data is obtained from the received summary of care record	Predominantly electronic; some paper

<sup>7</sup> Certified Electronic Health Record Technology (CEHRT). The Office of the National Coordinator for Health Information Technology (ONC) administers the Health IT Certification Program, which certifies Health IT Modules for meeting the ONC-designated standards for specific functionalities. The table indicates whether each Data Concept is available in certified technology for measurement as a discrete data element. For more information, see: <https://www.healthit.gov/policy-researchers-implementers/about-onc-health-it-certification-program>.

**IPP Feasibility Assessment**

- BH TP & MU EP: Based on the data concepts’ routine capture at patient registration and common electronic formats for patient registration and scheduling systems, the IPP has **high feasibility** for automatic capture, assuming a report can produce basic demographic information. If the BH TP obtains the data from the summary of care record sent by the MU EP, the feasibility assessment is lowered to moderate, due to the effort to identify and record the information in the behavioral health system. In a setting with mixed paper and electronic formats, manual calculation and report verification is expected and would decrease the feasibility.



**Denominator Statement**

Patients in the IPP with a behavioral health and a chronic condition.

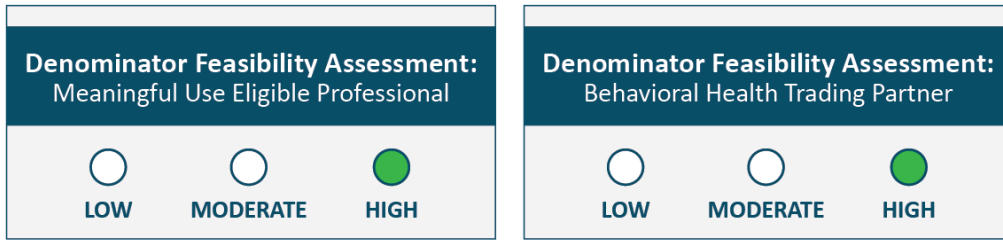
**Appendix 6.3 Table C: Denominator Data Concepts**

**Data Concept: 1. Diagnosis for behavioral health condition, CEHRT: Yes; 2. Diagnosis for chronic condition, CEHRT: Yes**

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	Patient record system: problem list	Routine capture at patient visit	Electronic and paper; standardized vocabulary in use in CEHRT
<b>Behavioral Health Trading Partner</b>	Patient record system: problem list OR received summary of care record	Routine capture at patient visit; less routine capture if the data is obtained from the received summary of care record	Electronic and paper; standardized vocabulary in use in CEHRT

**Denominator Feasibility Assessment**

- BH TP & MU EP: The denominator has **high feasibility**, based on routine capture in an electronic system capable of producing reports. If the trading partner obtains the data from the summary of care record sent by the MU EP, the feasibility assessment is lowered to moderate, due to the effort to identify and record the information in the behavioral health system.



**Numerator Statement**

The number of patients in the denominator with referrals received electronically.

**Appendix 6.3 Table D: Numerator Data Concepts**

**Data Concept: 1. Electronic summary of care record, CEHRT: Yes; 2. Electronic referral, CEHRT: Yes**

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	C-CDA sent via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	No routine capture; if captured, likely at time of send or during retrospective charting	Mix of electronic (may be checkbox or automatic recognition of data send) and paper to note electronic send
<b>Behavioral Health Trading Partner</b>	C-CDA received via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	No routine capture; if captured, likely at time of receipt or during charting	Mix of electronic (may be checkbox or automatic recognition of data receipt) and paper to note electronic receipt

**Numerator Feasibility Assessment**

- BH TP & MU EP: For providers with technology certified to ONC’s 2015 Edition Health IT Certification Criteria, the numerator is feasible with automatic capture and reporting of the send of a summary of care record by the MU EP and its receipt by the BH TP. However, following the send, MU EPs without the 2015 Edition requirements implemented may face manual confirmation of receipt for referrals and summary of care records. BH TPs without certified technology implemented may also encounter additional effort to document receipt if their systems do not have the automatic functionalities. Considering the burden manual confirmation would place on MU EPs and BH TPs, the numerator is characterized with **moderate** feasibility.



***Measure 1 Logic Model***

Initial Patient Population =

- Unique patients age  $\geq$  18 year(s)

Denominator = Patients in the Initial Patient Population with

- Diagnosis for behavioral health condition AND
- Diagnosis for a chronic condition

Numerator = Patients in the Denominator with

- Electronic summary of care record AND
- Electronic referral

## Event 2: The patient is treated by the behavioral health specialist

### Measure 2A – Meaningful Use Eligible Professional

The percentage of patients from measure 1A – MU EP with treatment initiated, following electronic send of a referral and summary of care record.

### Measure 2B – Behavioral Health Trading Partner

The percentage of patients from measure 1B – BH TP with treatment initiated, following electronic receipt of a referral and summary of care record.

Note: Measure 2A – MU EP may not be suitable for measurement on the MU EP side because it measures follow-up with the patient by the BH TP. Measurement may be possible if the MU EP shares an electronic system with the trading partner, or performs retrospective documentation. However, due to the verification requirements of behavioral health data sources, the feasibility assessments for this measure on the MU EP side are lower than for the BH TP.

Appendix 6.3 Figure C: Event 2



### Initial Patient Population

Denominator of Measure 1: Unique patients aged 18 and older with a behavioral health and a chronic condition.

### Denominator

Numerator of Measure 1: The number of patients in the IPP with an electronic summary of care record and electronic referral.

### Numerator Statement

For patients in the denominator, the number of patients for whom the provider initiates follow-up within 30 days (for example).

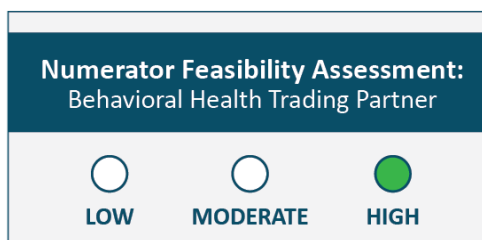
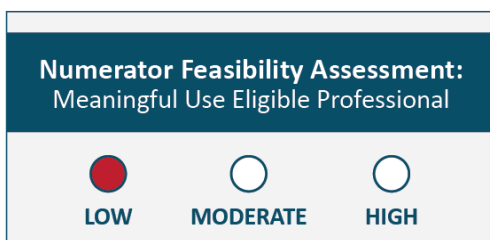
### Appendix 6.3 Table E: Numerator Data Concepts

#### Data Concept: 1. Provider follow-up, CEHRT: Yes, Example: Patient visit scheduled and completed

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	(if captured) Patient record or scheduling/billing system	(if captured) Routine capture at check-out or billing	(if captured) Predominately electronic; structured vocabulary
<b>Behavioral Health Trading Partner</b>	Patient record or scheduling/billing system	Routine capture at check-out or billing	Predominately electronic; structured vocabulary

#### Numerator Feasibility Assessment

- BH TP: The numerator has **high feasibility**, based on routine capture of standardized data concepts in an electronic system capable of producing reports.
- MU EP: This measure has **low feasibility** because it measures follow-up by the BH TP and does not reflect an intervention performed by the MU EP. If the information could be captured through a shared electronic system (or through retrospective documentation and verification), the numerator could have moderate feasibility, based on the capture of standardized data concepts that require effort to obtain and verification. However, if the data cannot be obtained, or is difficult to obtain, it is likely that the small number of patients in the numerator would not make the measure meaningful for MU EPs because, in essence, it is not a measure for which the MU EP can take action to improve the score.



#### Measure 2 Logic Model

Initial Patient Population = Denominator of Measure 1

Denominator = Numerator of Measure 1

Numerator = Patients in the Denominator with

- Provider follow-up <= 30 days of
- Electronic referral AND
- Electronic summary of care record



## Event 3: The behavioral health specialist communicates patient status to the referring provider

### Measure 3A – Meaningful Use Eligible Professional

The percentage of patients from Measure 2A for whom an electronic summary of care record is received.

### Measure 3B – Behavioral Health Trading Partner

The percentage of patients from Measure 2B for whom an electronic summary of care record is sent to the referring provider.

Appendix 6.3 Figure D: Event 3



### Initial Patient Population

Denominator of Measure 2: Patients aged 18 and older with a behavioral health and a chronic condition and with an electronic summary of care record and electronic referral.

### Denominator

Numerator of Measure 2: Number of patients in the IPP for whom the provider initiates follow-up within 30 days (for example).

### Numerator Statement

For patients in the denominator, the number of patients for whom the behavioral health provider electronically sends a summary of care record to the referring provider.

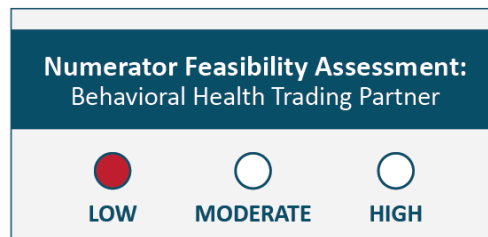
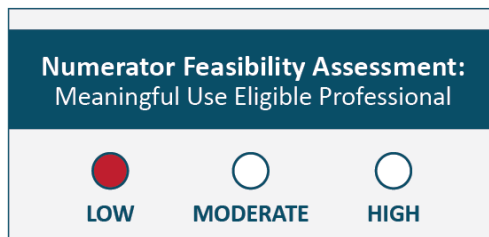
### Appendix 6.3 Table F: Numerator Data Concepts

#### Data Concept: 1. Electronic summary of care record , CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	C-CDA received via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	C-CDA received via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	C-CDA received via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)
<b>Behavioral Health Trading Partner</b>	C-CDA sent via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	C-CDA sent via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	C-CDA sent via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)

#### Numerator Feasibility Assessment

- BH TP & MU EP: Measures 3A/3B would require considerable burden for MU EPs and BH TPs and is characterized with **low** feasibility. Most critically, the measure’s logic presents a reporting challenge: BH TPs must verify that the summary of care record was sent to the MU EP who initiated the referral in Measure 1, and MU EPs must verify the summary of care record was sent by the BH TP who received the referral in Measure 1. As with Measures 1A/1B, for providers with technology certified to ONC’s 2015 Edition Health IT Certification Criteria, the numerator is feasible with automatic capture and reporting of the send of a summary of care record by the BH TP and its receipt by the MU EP. However, following the send, BH TPs without the 2015 Edition requirements implemented face manual confirmation of receipt for summary of care records sent via email, CD, or USB drive, for example. MU EPs without certified technology implemented may also encounter additional effort to document receipt if their systems do not have the automatic functionalities.



#### Measure 3 Logic Model

Initial Patient Population = Measure 2 Denominator

Denominator = Measure 2 Numerator

Numerator = Patients in the Denominator with

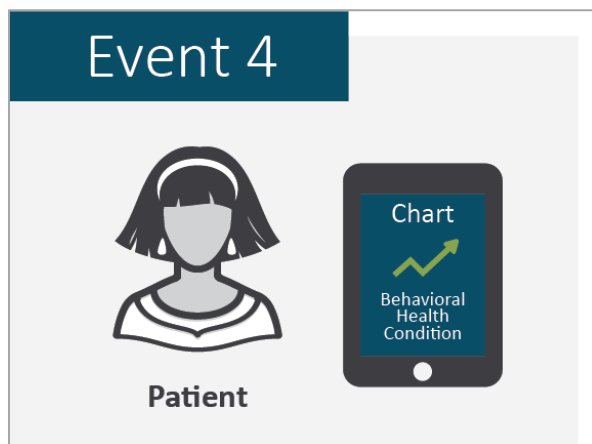
- Electronic summary of care record TO MU EP in Measure 1 provider AFTER
- Receipt of a referral AND
- Provider follow-up

## Event 4: The patient is monitored by both providers for a change in behavioral health condition

**Measure 4A** – Meaningful Use Eligible Professional & 4B – Behavioral Health Trading Partner

The percentage of patients whose behavioral health condition improved.

Appendix 6.3 Figure E: Event 4



### *Initial Patient Population*

Denominator of Measure 3: Patients aged 18 and older with a behavioral health and a chronic condition and with an electronic summary of care record and electronic referral, for whom the provider initiates follow-up within 30 days (for example).

### *Denominator*

Numerator of Measure 3: Patients in the denominator for whom a summary of care record is sent to the referring MU EP.

### *Numerator Statement*

The number of unique patients in the denominator for whom a positive change in condition occurred following the receipt of a summary of care record from the behavioral health provider.

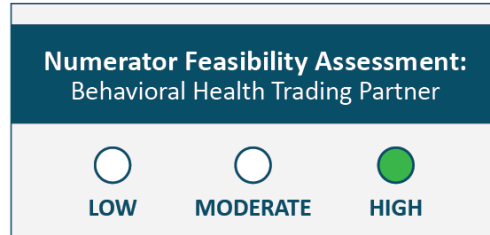
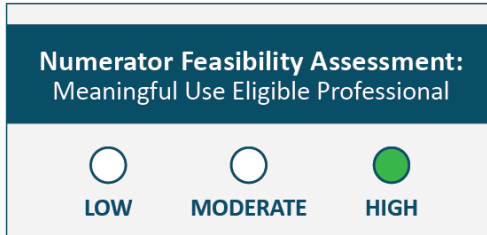
Appendix 6.3 Table G: Numerator Data Concepts

**Data Concept: 1. PHQ-9 score, CEHRT: No**

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	Patient record system: problem list	Routine capture at patient visit	Electronic and paper; standardized vocabulary in use in CEHRT
<b>Behavioral Health Trading Partner</b>	Patient record system: problem list	Routine capture at patient visit	Electronic and paper; standardized vocabulary in use in CEHRT

**Numerator Feasibility Assessment**

- BH TP & MU EP: The numerator has **high feasibility**, assuming that the reporting logic in a provider’s technology can detect and calculate the change in condition (including the meaning for screening tools with assessment values that would require interpretation for a positive or negative change in condition).



**Measure 4 Logic Model**

Initial Patient Population = Measure 3 Denominator

Denominator = Measure 3 Numerator

Numerator = Patients in the Denominator with

- PHQ-9 result < [PHQ-9 result value in Measure 1]

## 6.4 Care Planning and Management Measure Set

### *Electronic Information Exchange for Patients with Multiple Conditions*

#### **Introduction**

This measure set is developed to measure electronic exchange between a care planning and management (CPM) trading partner (TP) and a Meaningful Use (MU) Eligible Professional (EP) to communicate about a patient with multiple chronic conditions, for whom there has been a transition of care and/or relevant clinical event following a patient visit.

#### **Measure Set**

The events that initiate each exchange between a CPM TP and MU EP are described in the graphic below. Each event corresponds to one measure intended for data derived from the trading partner’s electronic record system; therefore, there are no measures presented for the MU EP. In future development, the measure set could be adapted to include, or be measured from, the MU EP’s records.

**Appendix 6.4 Figure A**

<b>Event 1</b>	A CPM TP documents (or has existing documentation of) other provider(s) actively treating a patient with multiple chronic conditions.	<b>Measure 1 - CPM TP:</b> The percentage of unique patients with more than one chronic condition for whom a provider has documentation of the other treating providers.
<b>Event 2</b>	At a transition of care and/or other relevant clinical event, the CPM TP electronically sends patient information to the patient’s other active provider(s) within one week.	<b>Measure 2 - CPM TP:</b> The percentage of unique patients for whom the provider electronically sends patient information to a minimum of one other actively treating provider within one week (for example), following a patient visit at which either a transition of care and/or other relevant clinical event occurred.
<b>Event 3</b>	The CPM TP electronically receives patient information from a provider who was sent patient information in Event 2.	<b>Measure 3 - CPM TP:</b> The percentage of unique patients for whom a provider electronically receives patient information from a minimum of one of the treating providers electronically sent patient information in Measure 2.

#### **Measure Set Feasibility Assessment**

This measure set has **overall low to moderate feasibility for CPM TPs**. The low feasibility is attributed to report calculation logic and data concepts that likely involve the manual verification of the patient health recipient.

Each measure in the set is presented with a more detailed feasibility assessment for its individual components.

#### **Estimated Reporting Period**

An estimated two-year reporting period is proposed to capture a meaningful Initial Patient Population and Denominator from which to observe interoperability trends for sharing patient information.

**Terms**

- Initial Patient Population (IPP): The group of patients or actions the measure is designed to measure.
- Denominator: A narrowed subset of patients or actions from the IPP (may be the same as the IPP).
- Numerator: The patients or actions from the denominator for whom or for which the measure’s process or outcome occurs.

**Appendix 6.4 Table A: Related Measures**

Measure Title	Measure Description	Measure Steward
Closing the Referral Loop: Receipt of Specialist Report	Percentage of patients with referrals, regardless of age, for which the referring provider receives a report from the provider to whom the patient was referred	National Committee for Quality Assurance (NCQA)
Eye care	Percentage of patients aged 18 years and older with a diagnosis of diabetic retinopathy who had a dilated macular or fundus exam performed with documented communication to the physician who manages the ongoing care of the patient with diabetes mellitus regarding the findings of the macular or fundus exam at least once within 12 months	AMA-PCPI; American Academy of Ophthalmology
Melanoma	Percentage of patient visits, regardless of age, seen with a new occurrence of melanoma who have a treatment plan documented in the chart that was communicated to the physician(s) providing continuing care within one month of diagnosis	American Academy of Dermatology; American Medical Association - Physician Consortium for Performance Improvement (AMA-PCPI); NCQA
Oncology	Percentage of patients, regardless of age, with a diagnosis of cancer who have undergone brachytherapy or external beam radiation therapy who have a treatment summary report in the chart that was communicated to physician(s) providing continuing care and to the patient within one month completing treatment	American Society for Therapeutic Radiology and Oncology; American Society of Clinical Oncology; AMA-PCPI
Osteoporosis	Percentage of patients aged 50 years and older treated for a fracture with documentation of communication between the physician treating the fracture and the physician or other clinician managing the patient's on-going care, that a fracture occurred and that the patient was or should be considered for osteoporosis treatment or testing	NCQA
Pediatrics	Percentage of pediatric or adolescent patients being transferred to an adult primary care provider whose chart documents the name of that provider	AY Chen, SM Schragger, R Mangione-Smith; American Academy of Pediatrics

Measure Title	Measure Description	Measure Steward
Perioperative protocol	Percentage of patients with comorbidities undergoing elective non-high-risk surgery who have preoperative recommendations documented/communicated to the patient and/or surgical facility for comorbidities	Institute for Clinical Systems Improvement (ICSI)
Venous thromboembolism (VTE) diagnosis and treatment	Percentage of patients with any of these diagnosis – VTE, PE, DVT – indicating a complete list of medications was communicated to the next clinician of service when the patient is referred or transferred to another setting, service, practitioner or level of care within or outside the organization	ICSI

Notes on Related Measures:

- The table above excludes measures ONLY assessing:
  - Patients referred without accompanying information from the referring provider;
  - Patients with a plan of care documented;
  - Additionally, measures based on survey data and inpatient measures were excluded.



## Event 1: A Care Planning & Management trading partner documents (or has existing documentation) of other provider(s) actively treating a patient with multiple chronic conditions

### Measure 1

The percentage of unique patients with more than one chronic condition for whom a provider has documentation of the other actively treating providers.

Appendix 6.4 Figure B: Event 1



### Initial Patient Population (IPP) Statement

Unique patients 18 years and older

Appendix 6.4 Table B: IPP Data Concepts

Data Concept: 1. Unique patient, CEHRT<sup>8</sup>: Yes; 2. Patient age, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
Care Planning and Management	Patient record or scheduling system	Routine capture at patient registration	Predominantly electronic; some paper Trading Partner

### IPP Feasibility Assessment

Based on the data concepts' routine capture at patient registration and common electronic formats for patient registration and scheduling systems, the IPP has **high** feasibility for automatic capture, assuming a report can produce basic demographic information. In a setting with mixed paper and electronic formats, manual calculation and report verification is expected and would decrease the feasibility.

<sup>8</sup> Certified Electronic Health Record Technology (CEHRT). The Office of the National Coordinator for Health Information Technology (ONC) administers the Health IT Certification Program, which certifies Health IT Modules for meeting the ONC-designated standards for specific functionalities. The table indicates whether each Data Concept is available in certified technology for measurement as a discrete data element. For more information, see: <https://www.healthit.gov/policy-researchers-implementers/about-onc-health-it-certification-program>.



**Denominator Statement**

Patients in the IPP with more than one chronic condition listed in the problem list.

**Appendix 6.4 Table C: Denominator Data Concepts**

**Data Concept: 1. Condition, CEHRT: Yes**

Stakeholder	Source	Capture and Workflow	Format
Care Planning and Management	Patient record system: problem list	Routine capture at patient visit	Electronic and paper; standardized vocabulary in use in CEHRT

**Denominator Feasibility Assessment**

The denominator has **moderate feasibility**, based on the routine capture of patient problems in an electronic system capable of producing reports. Certified and non-certified electronic health record systems in general do not yet capture a patient’s need for social services in a standardized, discrete format.



**Numerator Statement**

For patients in the denominator, the number of patients for whom the provider documents (or has documentation of) the names of providers actively treating the patient AND the contact information necessary to send patient information.

### Appendix 6.4 Table D: Numerator Data Concepts

**Data Concept: 1. Provider(s) actively treating the patient, CEHRT: No; 2. Contact information necessary to send patient information, CEHRT: No**

Stakeholder	Source	Capture and Workflow	Format
<b>Care Planning and Management</b>	Patient record or scheduling system	No routine capture and maintenance; if captured, likely during patient visit or check-out	Electronic and paper; in electronic format, a CDA document may contain this information, but not in a standardized vocabulary or format

#### **Numerator Feasibility Assessment**

The denominator has **low feasibility**, based on the infrequent capture and maintenance of information on patients’ external care team, as well as the potential burden of manual configuration if a provider’s electronic record system does not have “off the shelf” fields to capture this information.



#### **Measure 1 Logic Model**

Initial Patient Population =

- Unique patients age >= 18 year(s)

Denominator = Patients in the Initial Patient Population with

- 1 chronic condition in problem list

Numerator = Patients in the Denominator with

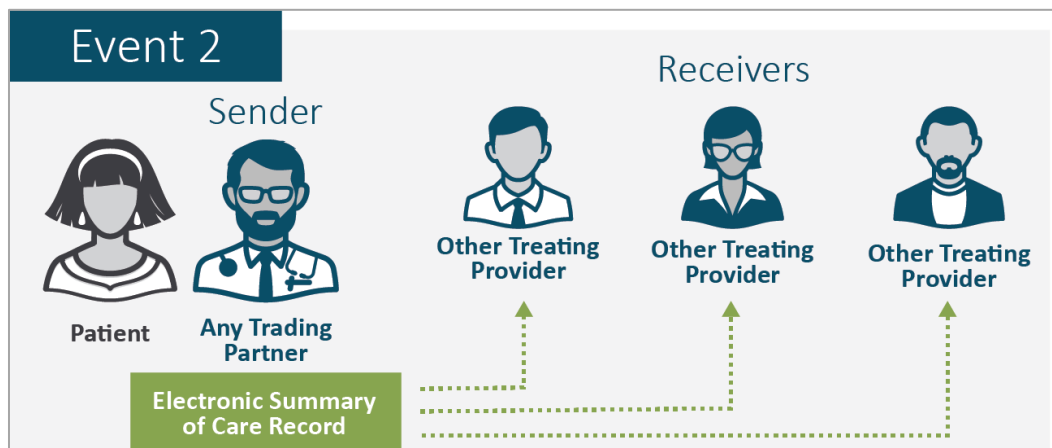
- Providers actively treating patient documented AND
- Contact information

Event 2: At a transition of care and/or other relevant clinical event, the Care Planning & Management trading partner electronically sends patient information to the patient’s other active provider(s) within one week

**Measure 2**

The percentage of unique patients for whom the provider electronically sends patient information to a minimum of one other actively treating provider within one week (for example), following a patient visit at which either a transition of care and/or other relevant clinical event occurred.

Appendix 6.4 Figure C: Event 2



**Initial Patient Population**

Denominator of Measure 1: Unique patients aged 18 and older with more than one chronic condition listed in the problem list.

**Denominator**

Numerator of Measure 1: The number of patients in the IPP with documentation of the names of providers actively treating the patient AND the contact information necessary to send patient information.

**Numerator Statement**

For patients in the denominator, the number of patients for whom the provider electronically sends patient information to a minimum of one of the providers identified in the numerator of Measure 1.

### Appendix 6.4 Table E: Numerator Data Concepts

#### Data Concept: 1. Patient visit, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
Care Planning and Management	Patient record or scheduling system	Routine capture at check-out or billing	Predominately electronic; structured vocabulary

#### Data Concept: 2. Electronic patient information (sent), CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
Care Planning and Management	C-CDA sent via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	No routine capture; if captured, likely at send time or during charting	Mix of electronic (may be checkbox or automatic recognition of data send) and paper to note electronic send

#### Data Concept: 3. Transition of Care, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
Care Planning and Management	Patient record or scheduling system	Variance in routine capture	Checkbox or background logic identification

#### Data Concept: 4. Other relevant clinical event, CEHRT: No

Stakeholder	Source	Capture and Workflow	Format
Care Planning and Management	Patient record	Variance in routine capture	Checkbox or background logic identification

#### Numerator Feasibility Assessment

Measure 2 would require considerable burden for CPM TPs and is characterized with **low** feasibility. Most critically, the measure’s logic presents a reporting challenge: CPM TPs must verify that the patient information was sent to the one of the patient’s active care providers identified in Measure 1. For CPM TPs with technology certified to ONC’s 2015 Edition Health IT Certification Criteria, the numerator is feasible with automatic capture and reporting of the send of a summary of care record in C-CDA format, for example. Providers without certified technology implemented may also encounter additional effort to document the send if their systems do not have the automatic functionalities.



### ***Measure 2 Logic Model***

Initial Patient Population = Denominator of Measure 1

Denominator = Numerator of Measure 1

Numerator = Patients in the Denominator with

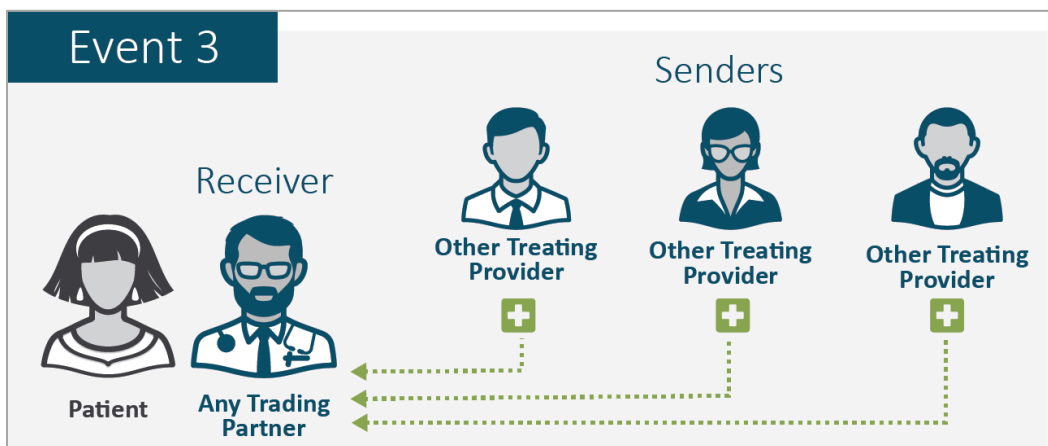
- Patient information sent to  $\geq 1$  provider actively treating patient  $\leq 7$  days AFTER:
- Patient visit WITH;
- Transition of care; OR
- Other relevant clinical event.

## Event 3: The Care Planning & Management trading partner electronically receives patient information from a provider who was sent patient information in Event 2

### Measure 3

The percentage of unique patients for whom a provider electronically receives patient information from a minimum of one of the treating providers electronically sent patient information in Measure 2.

Appendix 6.4 Figure D: Event 4



### Initial Patient Population

Denominator of Measure 2: Patients aged 18 and older with documentation of the names of providers actively treating the patient AND the contact information necessary to send patient information AND a patient visit at which a transition of care and/or other relevant clinical event occurred.

### Denominator

Numerator of Measure 2: Number of patients in the IPP for whom the provider electronically sends patient information to a minimum of one of the providers identified in the numerator of Measure 1.

### Numerator Statement

For patients in the denominator, the number of patients for whom the provider electronically receives patient information from a minimum of one of the providers identified in the numerator of Measure 2.

Appendix 6.4 Table F: Numerator Data Concept

#### Data Concept: 1. Patient information (received), CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
Care Planning and Management	C-CDA received via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	No routine capture; if captured, likely at time of receipt or during charting	Mix of electronic (may be checkbox or automatic recognition of data receipt) and paper to note electronic receipt



### ***Numerator Feasibility Assessment***

For the same reasons described in the Feasibility Assessment for Measure 2, the numerator is characterized with **low** feasibility.



### ***Measure 3 Logic Model***

Initial Patient Population = Measure 2 Denominator

Denominator = Measure 2 Numerator

Numerator = Patients in the Denominator with:

- $\geq 1$  Patient information received from actively treating patient AFTER
- Patient information sent to  $\geq 1$  provider actively treating patient

## 6.5 Social Services Measure Set

### *Electronic Information Exchange for Patients with Referral to Social Services Trading Partners*

#### **Introduction**

This measure set is developed to measure electronic exchange between a social services (SS) trading partner (TP) and a Meaningful Use (MU) Eligible Professional (EP) for a patient reporting financial resource strain and/or intimate partner violence.

#### **Measure Set**

The events that initiate each exchange between a SS TP and MU EP are described in the graphic below. Each event corresponds to one measure intended for data derived from an MU EP’s electronic record system and a separate measure intended for data derived from the SS TP’s electronic record system.

**Appendix 6.5 Figure A**

<p>Event <b>1</b></p> <p>A patient reports financial resource strain and/or intimate partner violence and is referred to social services.</p>	<p><b>Measure 1A - MU EP:</b> The percentage of patients who report financial resource strain and/or intimate partner violence with an electronic referral and health information sent.</p> <p><b>Measure 1B - SS TP:</b> The percentage of patients who report financial resource strain and/or intimate partner violence with an electronic referral and health information received.</p>
<p>Event <b>2</b></p> <p>The patient has a visit with social services.</p>	<p><b>Measure 2A - MU EP:</b> The percentage of patients from Measure 1A - MU EP with a social services visit, following electronic send of a referral and health information.</p> <p><b>Measure 2B - SS TP:</b> The percentage of patients from Measure 1B - MU EP with with a social services visit, following electronic receipt of a referral and health information.</p>
<p>Event <b>3</b></p> <p>Social services communicates the patient’s status to the referring provider.</p>	<p><b>Measure 3A - MU EP:</b> The percentage of patients from Measure 2A - MU EP for whom an electronic status report is received.</p> <p><b>Measure 3B - SS TP:</b> The percentage of patients from Measure 2B - MU EP for whom an electronic status report is sent to the referring provider.</p>

#### **Measure Set Feasibility Assessment**

This measure set has **overall moderate to high feasibility for SS TPs and MU EPs**, with the exceptions of (1) Measures 3A – MU EP and 3B – SS TP, which require report calculation logic and a data concept that likely involve the manual verification of a summary of care recipient in Measures 1A – MU EP and 1B – SS TP; and (2) Measure 2A – MU EP, which would require data obtained from the SS TP’s electronic records system.

Each measure in the set is presented with a more detailed feasibility assessment for its individual components.

### ***Estimated Reporting Period***

An estimated one-year reporting period is proposed, given the importance of timeliness to refer patients who report financial resource strain and/or intimate partner violence with social services.

### ***Terms:***

- Initial Patient Population (IPP): The group of patients or actions the measure is designed to measure.
- Denominator: A narrowed subset of patients or actions from the IPP (may be the same as the IPP).
- Numerator: The patients or actions from the denominator for whom or for which the measure's process or outcome occurs.

## Event 1: A patient reports financial resource strain and/or intimate partner violence and is referred to social services

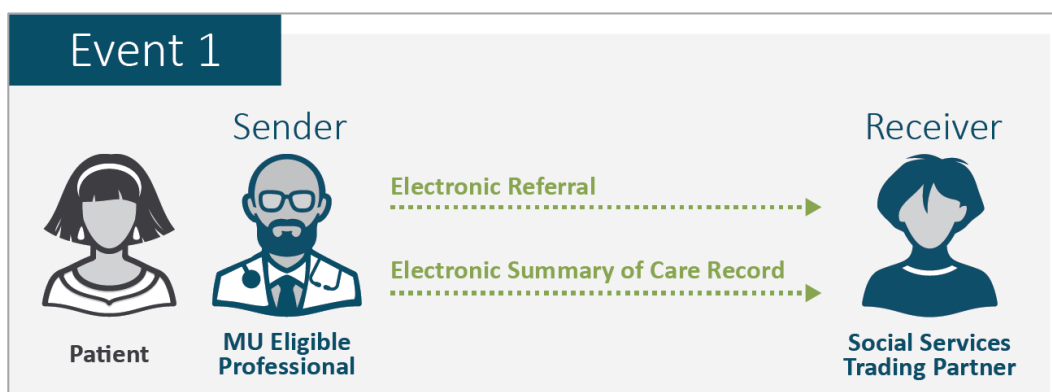
### Measure 1A - MU EP

The percentage of patients who report financial resource strain and/or intimate partner violence with an electronic referral and summary of care record sent.

### Measure 1B - SS TP

The percentage of patients who report financial resource strain and/or intimate partner violence with an electronic referral and summary of care record received.

Appendix 6.5 Figure B: Event 1



### Initial Patient Population (IPP) Statement

Unique patients 18 years and older.

Appendix 6.5 Table A: IPP Data Concepts

Data Concept: 1. Unique patient, CEHRT<sup>9</sup>: Yes; 2. Patient age, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
Meaningful Use Eligible Professional	Patient record or scheduling system	Routine capture at patient registration	Predominantly electronic; some paper
Social Services Trading Partner	Patient record system: problem list OR received summary of care record	Routine capture at patient visit; less routine capture if the data is obtained from the received summary of care record	Predominantly electronic; some paper

<sup>9</sup> Certified Electronic Health Record Technology (CEHRT). The Office of the National Coordinator for Health Information Technology (ONC) administers the Health IT Certification Program, which certifies Health IT Modules for meeting the ONC-designated standards for specific functionalities. The table indicates whether each Data Concept is available in certified technology for measurement as a discrete data element. For more information, see: <https://www.healthit.gov/policy-researchers-implementers/about-onc-health-it-certification-program>.

**IPP Feasibility Assessment**

- SS TP & MU EP: Based on the data concepts’ routine capture at patient registration and common electronic formats for patient registration and scheduling systems, the IPP has **high feasibility** for automatic capture, assuming a report can produce basic demographic information. If the SS TP obtains the data from the summary of care record sent by the MU EP, the feasibility assessment is lowered to moderate, due to the effort to identify and record the information in the social services system. In a setting with mixed paper and electronic formats, manual calculation and report verification is expected and would decrease the feasibility.



**Denominator Statement**

Patients in the IPP who report financial resource strain and/or intimate partner violence at a patient visit.

**Appendix 6.5 Table B: Denominator Data Concepts**

**Data Concepts: 1. Financial resource strain, CEHRT: Yes (2015 Edition); 2. Intimate partner violence, CEHRT: Yes (2015 Edition)**

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	Patient record	Captured during patient visit; capture is not routine	Predominantly electronic; some paper
<b>Social Services Trading Partner</b>	Patient record system OR received summary of care record	Routine capture at client visit; less routine capture if the data is obtained from the received summary of care record	Electronic and paper; standardized vocabulary in use in CEHRT

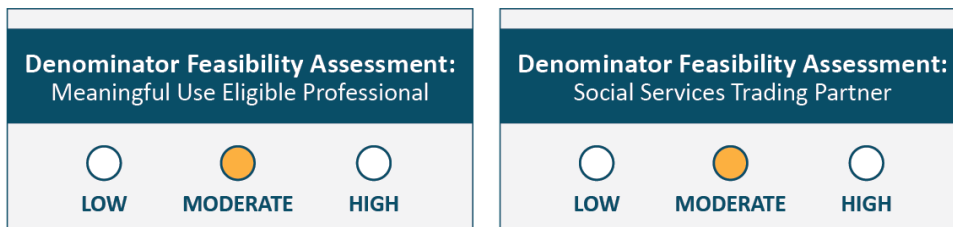
**Data Concepts: 3. Patient visit, CEHRT: Yes**

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	Scheduling and/or billing system	Routine capture at check-in or billing	Predominantly electronic; some paper
<b>Social Services Trading Partner</b>	Patient record system OR received summary of care record	Not routine capture at client visit; less routine capture if the data is obtained from the received summary of care record	Electronic and paper; standardized vocabulary in use in CEHRT

**Denominator Feasibility Assessment**

SS TP & MU EP: The ability to capture intimate partner violence and financial resource strain data concepts in technology certified to the 2015 Edition Standards and Certification Criteria allows for high

feasibility of the denominator, as technology will offer providers standardized LOINC vocabulary codes to capture patient information for the first time; however, the infrequent data capture lowers the overall feasibility assessment to **moderate**, considering that data may not be consistently gathered to make provider comparisons valid.



**Numerator Statement**

The number of patients in the denominator with referrals received electronically.

**Appendix 6.5 Table C: Numerator Data Concepts**

**Data Concepts: 1. Electronic summary of care record, CEHRT: Yes; 2. Electronic referral, CEHRT: Yes**

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	C-CDA sent via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	No routine capture; if captured, likely at time of send or during retrospective charting	Mix of electronic (may be checkbox or automatic recognition of data send) and paper to note electronic send
<b>Social Services Trading Partner</b>	C-CDA received via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	No routine capture; if captured, likely at time of receipt or during charting	Mix of electronic (may be checkbox or automatic recognition of data receipt) and paper to note electronic receipt

**Numerator Feasibility Assessment**

SS TP & MU EP: For providers with technology certified to ONC’s 2015 Edition Health IT Certification Criteria, the numerator is feasible with automatic capture and reporting of the send of a summary of care record by the MU EP and its receipt by the SS TP. However, following the send, MU EPs without the 2015 Edition requirements implemented face manual confirmation of receipt for referrals and summary of care records sent via email, CD, or USB drive, for example. SS TPs without certified technology implemented may also encounter additional effort to document receipt if their systems do not have the automatic functionalities. Considering the burden manual confirmation would place on MU EPs and SS TPs, the numerator is characterized with **moderate** feasibility.



**Measure 1 Logic Model**

Initial Patient Population =

- Unique patients age >= 18 year(s)

Denominator = Patients in the Initial Patient Population with:

- Financial resource strain: OR
- Intimate partner violence.

Numerator = Patients in the Denominator with:

- Electronic summary of care record; AND
- Electronic referral.



## Event 2: The patient has a visit with social services

### **Measure 2A - MU EP**

The percentage of patients from measure 1A – MU EP with a social services visit, following electronic send of a referral and summary of care record.

### **Measure 2B - SS TP**

The percentage of patients from measure 1B – SS TP with a social services visit, following electronic receipt of a referral and summary of care record.

Appendix 6.5 Figure C: Event 2



Note: Measure 2A – MU EP may not be suitable for measurement on the MU EP side because it measures follow-up with the patient by the SS TP. Measurement may be possible if the MU EP shares an electronic system with the trading partner, or performs retrospective documentation. However, due to the verification requirements of social services data sources, the feasibility assessments for this measure on the MU EP side are lower than for the SS TP.

### **Initial Patient Population**

Denominator of Measure 1: Unique patients aged 18 and older who report financial resource constrain and/or intimate partner violence at a patient visit.

### **Denominator**

Numerator of Measure 1: The number of patients in the IPP with an electronic summary of care record and electronic referral.

### **Numerator Statement**

For patients in the denominator, the number of patients for whom the social services provider initiates follow-up within 30 days (for example).

### Appendix 6.5 Table D: Numerator Data Concepts

#### Data Concept: 1. Provider follow-up, CEHRT: Yes – Example: Patient visit scheduled and completed

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	(if captured) Patient record or scheduling/billing system	(if captured) Routine capture at check-out or billing	(if captured) Predominately electronic; structured vocabulary
<b>Social Services Trading Partner</b>	Patient record or scheduling/billing system	Routine capture at check-out or billing	Predominately electronic; structured vocabulary

#### Numerator Feasibility Assessment

SS TP: The numerator has **high feasibility**, based on routine capture of visit information in an electronic system capable of producing reports.

MU EP: This measure has **low feasibility** because it measures follow-up by the SS TP and does not reflect an intervention performed by the MU EP. If the information could be captured through a shared electronic system (or through retrospective documentation and verification), the numerator could have moderate feasibility, based on the capture of standardized data concepts that require effort to obtain and verification. However, if the data cannot be obtained, or is difficult to obtain, it is likely that the small number of patients in the numerator would not make the measure meaningful for MU EPs because, in essence, it is not a measure for which the MU EP can take action to improve the score.



#### Measure 2 Logic Model

Initial Patient Population = Denominator of Measure 1

Denominator = Numerator of Measure 1

Numerator = Patients in the Denominator with:

- Social Services follow-up <= 30 days of
- Electronic referral; AND
- Electronic summary of care record.

## Event 3: Social Services communicates the patient’s status to the referring provider

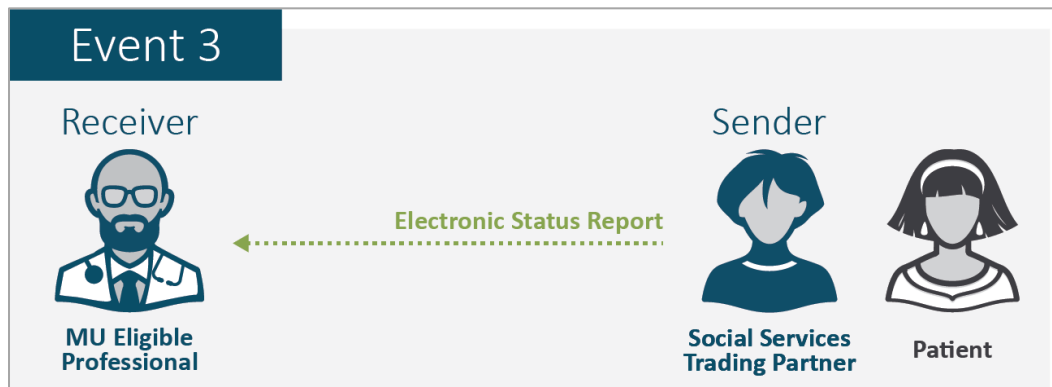
### **Measure 3A - MU EP**

The percentage of patients from measure 2A – MU EP for whom an electronic status report is received.

### **Measure 3B - SS TP**

The percentage of patients from measure 2B – SS TP for whom an electronic status report is sent to the referring provider.

Appendix 6.5 Figure D: Event 3



### **Initial Patient Population**

Denominator of Measure 2A – MU EP: Patients aged 18 and older with financial resource strain and/or intimate partner violence reported at a patient visit, with an electronic summary of care record and electronic referral.

### **Denominator**

Numerator of Measure 2B – SS TP: Number of patients in the IPP for whom the social services provider initiates follow-up within 30 days (for example).

### **Numerator Statement**

For patients in the denominator, the number of patients for whom the social services trading partner electronically sends a status report to the referring provider.

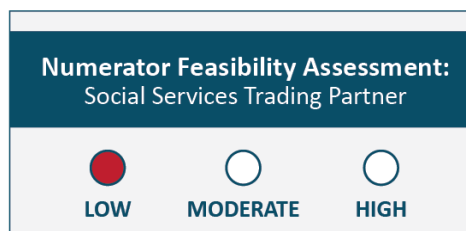
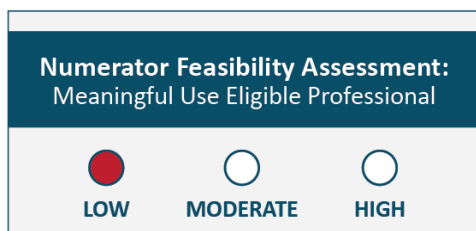
### Appendix 6.5 Table E: Numerator Data Concepts

#### Data Concept: 1. Electronic summary of care record, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	C-CDA received via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	No routine capture; if captured, likely at time of receipt or during charting	Mix of electronic (may be checkbox or automatic recognition of data receipt) and paper to note electronic receipt
<b>Social Services Trading Partner</b>	C-CDA sent via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	No routine capture; if captured, likely at send time or during charting	Mix of electronic (may be checkbox or automatic recognition of data send) and paper to note electronic send

#### Numerator Feasibility Assessment

- SS TP & MU EP: Measures 3A/3B would require considerable burden for MU EPs and SS TPs and is characterized with **low** feasibility. Most critically, the measure’s logic presents a reporting challenge: SS TPs must verify that the status report was sent to the MU EP who initiated the referral in Measure 1, and MU EPs must verify the summary of care record was sent by the SS TP who received the referral in Measure 1. As with Measures 1A/1B, for providers with technology certified to ONC’s 2015 Edition Health IT Certification Criteria, the numerator is feasible with automatic capture and reporting of the send of a status report by the SS TP and its receipt by the MU EP. However, following the send, SS TPs without the 2015 Edition requirements implemented face manual confirmation of receipt for summary of care records sent via email, CD, or USB drive, for example. MU EPs without certified technology implemented may also encounter additional effort to document receipt if their systems do not have the automatic functionalities.



#### Measure 3 Logic Model

Initial Patient Population = Measure 2 Denominator

Denominator = Measure 2 Numerator

Numerator = Patients in the Denominator with:

- Electronic status report TO MU EP in Measure 1 provider AFTER
  - Receipt of a referral; AND
  - Provider follow-up.

## 6.6 Patient Generated Health Data Measure Set

### *Receipt and Incorporation of Patient Generated Health Data*

#### *Introduction*

This measure set is developed to measure patient generated health data (PGHD) sent to and incorporated by a Meaningful Use (MU) Eligible Professional (EP).

#### *Measure Set*

The graphic below illustrates the exchange and action events that each correspond to one measure in this set. Data for measurement is derived from the EP’s electronic record system; therefore, there are no measures presented for the PGHD trading partner (TP).

Data collection from PGHD TP technology is not suggested for this measure set, which focuses on receipt of PGHD (not the send of PGHD). While a PGHD data source may contain reference to the patient’s current medical information, and indeed, may be more current than the receiving provider’s, it is not an appropriate data source, as the measures should include patients for whom the receiving provider is knowledgeable of and actively monitoring the patient for the condition relevant to the received PGHD. In the future, a different measure could be constructed to explore the discovery of new problems contained in PGHD received by the provider.

**Appendix 6.6 Figure A**

<b>Event 1</b> The MU EP receives PGHD from a patient	<b>Measure 1 - MU EP:</b> The percentage of unique patients (or authorized representatives) from whom the provider receives at least one electronic delivery of PGHD relevant to a diagnosis on the patient’s current problem list
<b>Event 2</b> The provider incorporates PGHD in the patient’s record	<b>Measure 2 - MU EP:</b> The percentage of unique patients from whom the provider incorporates electronically delivered PGHD in the patient’s record at least once

#### *Measure Set Feasibility Assessment*

This measure set has **overall moderate feasibility for MU EPs**. The moderate feasibility is applicable to settings without technology capable of recording receipt of PGHD and where providers and/or staff members must record received clinical content. In settings where the technology can perform these actions, the feasibility is high.

Each measure in the set is presented with a more detailed feasibility assessment for its individual components.

#### *Estimated Reporting Period*

An estimated one-year reporting period is proposed, given the benefits of reviewing and capturing data recently shared by a patient, as well as the decreasing utility of expiring patient data.

#### *Terms:*

- Initial Patient Population (IPP): The group of patients or actions the measure is designed to measure.

- Denominator: A narrowed subset of patients or actions from the IPP (may be the same as the IPP).
- Numerator: The patients or actions from the denominator for whom or for which the measure’s process or outcome occurs.

## Event 1: The Meaningful Use (MU) Eligible Professional (EP) receives PGHD from a patient.

### Measure 1

The percentage of unique patients (or authorized representatives) from whom the provider receives at least one electronic delivery of PGHD relevant to a diagnosis on the patient’s current problem list.

Appendix 6.6 Figure B: Event 1



### Initial Patient Population (IPP) Statement

Unique patients 18 years and older.

Appendix 6.6 Table A: IPP Data Concepts

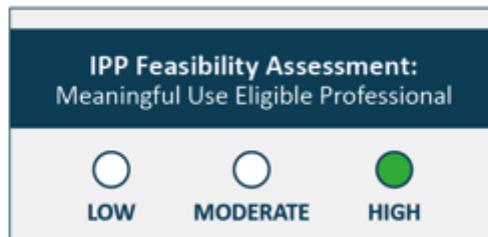
#### 1. Unique patient, CEHRT<sup>10</sup>: Yes; 2. Patient age, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
Meaningful Use Eligible Professional	Patient record or scheduling system	Routine capture at patient registration	Predominantly electronic; some paper

<sup>10</sup> Certified Electronic Health Record Technology (CEHRT). The Office of the National Coordinator for Health Information Technology (ONC) administers the Health IT Certification Program, which certifies Health IT Modules for meeting the ONC-designated standards for specific functionalities. The table indicates whether each Data Concept is available in certified technology for measurement as a discrete data element. For more information, see: <https://www.healthit.gov/policy-researchers-implementers/about-onc-health-it-certification-program>.

**IPP Feasibility Assessment**

Based on the data concepts' routine capture at patient registration and common electronic formats for patient registration and scheduling systems, the IPP has a **high** feasibility for automatic capture, assuming a report can produce basic demographic information. In a setting with mixed paper and electronic formats, manual calculation and report verification is expected and would decrease the feasibility.



**Denominator Statement**

Patients in the IPP with a diagnosis relevant to received PGHD.

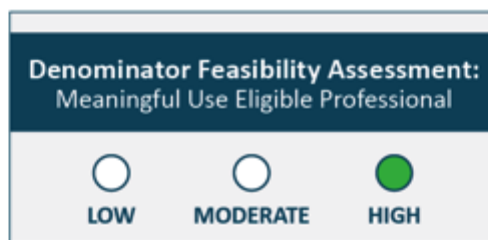
**Appendix 6.6 Table B: Denominator Data Concept**

**Data Concept: 1. Diagnosis on current problem list, CEHRT: Yes**

Stakeholder	Source	Capture and Workflow	Format
Meaningful Use Eligible Professional	Patient record system: problem list	Routine capture at patient visit	Electronic and paper; standardized vocabulary in use in CEHRT

**Denominator Feasibility Assessment**

The feasibility is characterized as **high**, based on routine capture in an electronic system capable of producing reports. In a setting with mixed paper and electronic formats, manual calculation and report verification is expected and would lower the feasibility to moderately high.



**Numerator Statement**

For patients in the denominator, the number of patients for whom the provider electronically receives PGHD.

### Appendix 6.6 Table C: Numerator Data Concepts

#### Data Concept: 1. Electronic receipt of PGHD, CEHRT: Yes

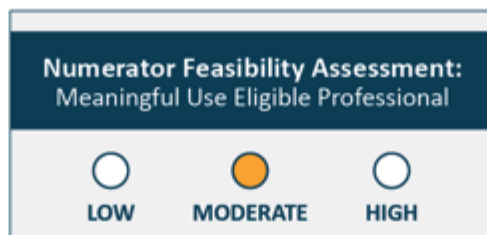
Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b>	C-CDA sent via secure email (e.g., Direct); Unsecure email; CD; USB drive (examples)	Not routine capture at patient visit	Electronic (may be checkbox or automatic recognition of outgoing data source) and paper to note electronic receipt

#### Data Concept: 2. PGHD, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b> (May contain meta data notation of the patient as the source, but this information is not necessary)	PGHD	Not routine identification at patient visit or outside of patient visit	Electronic and paper; standardized vocabulary in use in CEHRT

#### Numerator Feasibility Assessment

The feasibility for these trading partners is characterized as **moderate**, based on low rates of PGHD receipt. While it is feasible to receive the data, this places a burden on providers and office staff to identify and report PGHD received electronically.



#### Measure 1 Logic Model

Initial Patient Population =

- Unique patients age >= 18 year(s)

Denominator = Patients in the Initial Patient Population with:

- Diagnosis on current problem list

Numerator Patients in the Denominator with:

- >=1 PGHD received

Logic note: As currently designed, Measure 1 counts patients in the numerator for the first, and first only, delivery of PGHD. A patient who routinely sends PGHD to their provider would count only once in the numerator of Measure 1.

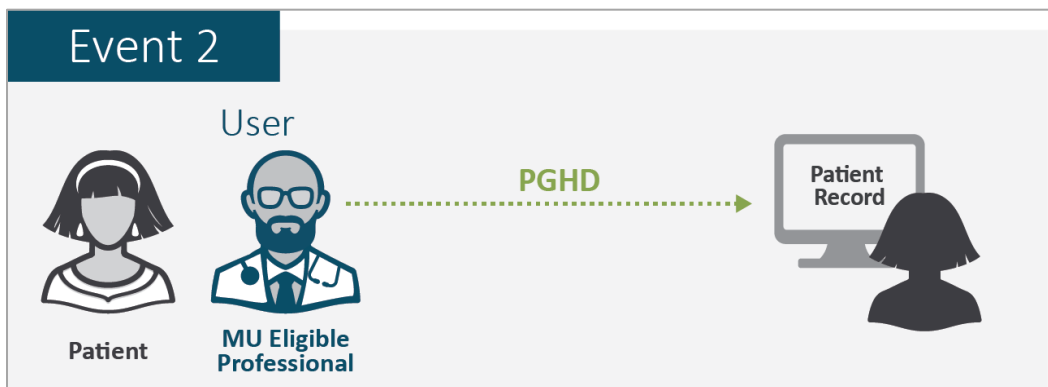


## Event 2: The Meaningful Use (MU) Eligible Professional (EP) incorporates PGHD into the patient’s record.

### Measure 2

The percentage of unique patients from whom the provider incorporates electronically delivered PGHD in the patient’s record at least once.

Appendix 6.6 Figure C: Event 2



### Initial Patient Population

Denominator for Measure 1: Unique patients 18 years and older with a diagnosis on their current problem list.

### Denominator

Numerator for Measure 1: The number of patients in the IPP for whom the provider electronically receives PGHD.

### Numerator Statement

For patients in the denominator, the number of patients for whom the provider incorporates PGHD in the patient’s record at least once.

Appendix 6.6 Table D: Numerator Data Concepts

### Data Concept: 1. Incorporation of PGHD, CEHRT: Yes

Stakeholder	Source	Capture and Workflow	Format
<b>Meaningful Use Eligible Professional</b> <i>(May contain meta data notation of the patient as the source, but this information is not necessary)</i>	Patient record	Not routine capture at or outside of patient visit	Electronic or paper; may contain meta data notation of the patient as the source, but this information is not necessary for inclusion in the numerator

### Numerator Feasibility Assessment

The numerator has **moderate feasibility**, based on low rates of PGHD Incorporation. While it is feasible to enter the data, this creates a burden on providers and office staff to enter the PGHD.



### Measure 2 Logic Model

Initial Patient Population = Measure 1 Denominator

Denominator = Measure 1 Numerator

Numerator = Patients in the Denominator with:

- $\geq 1$  PGHD incorporated AFTER
- $\geq 1$  PGHD received

Logic note: As currently designed, Measure 2 counts patients in the numerator for the first, and first only, incorporation of PGHD. Patients for whom a provider who routinely incorporates PGHD would count only once in the numerator of Measure 2. In implementation, the level of measurement could change to focus on the rate of integration for all PGHD received.

## 6.7 Abbreviations

AHA – American Hospital Association  
AMA – American Medical Association  
API – Application Programming Interface  
ASPE – Office of the Assistant Secretary for Planning and Evaluation  
BH – Behavioral Health  
BHITS – Behavioral Health Information Technology Survey  
CAH – Critical Access Hospitals  
C-CDA – Consolidated Clinical Documentation Architecture  
CDA – Clinical Documentation Architecture  
CEHRT – Certified Electronic Health Records Technology  
CGH – Clinovations Government + Health  
CMS – Centers for Medicare & Medicaid Services  
CP&M – Care Planning & Management  
DHHS – United States Department of Health and Human Services  
DS4P – Data Segmentation for Privacy  
eCQM – Clinical Quality Measures  
EH – Eligible Hospital  
EHR – Electronic Health Record  
EP – Eligible Professional  
FHIR – Fast Healthcare Interoperability Resources  
HIE – Health Information Exchange  
HIPAA – Health Insurance Portability and Accountability Act of 1996  
HIT – Health Information Technology  
HITECH – Health Information Technology for Economic and Clinical Health Act  
HL7 – Health Level Seven International  
ICSI – Institute for Clinical Systems Improvement  
IEEE – Institute for Electrical and Electronics Engineering  
IPP – Initial Patient Population  
IT – Information Technology  
LOINC – Logical Observation Identifiers Names and Codes  
MACRA – Medicare Access and CHIP Reauthorization Act of 2015  
MOF – Memorandum of Findings  
MU – Meaningful Use  
NCQA – National Committee for Quality Assurance  
ONC – Office of the National Coordinator for Health Information Technology  
PCPI – Physician Consortium for Performance Improvement  
PDF – Portable Document Format  
PGHD – Patient Generated Health Data  
QIP – Quality Insights of Pennsylvania  
SAMHSA – Substance Abuse and Mental Health Services Administration  
S&I – Standards and Interoperability  
SS – Social Services  
TEP – Technical Expert Panel  
TP – Trading Partner

## 6.8 References

<sup>1</sup> <https://www.healthit.gov/policy-researchers-implementers/onc-health-it-certification-program>

<sup>2</sup> <https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html>

<sup>3</sup> <http://cswr.columbia.edu/wp-content/uploads/2013/04/Boles.-Technologys-role-in-the-nonprofit-sector-Increasing-organizational-effectiveness-and-efficiency-through-technology-innovations.pdf>

<sup>4</sup> <http://www.socialworktoday.com/archive/031714p28.shtml>

<sup>5</sup> Madden JJ, Lakoma MD, Rusinak D, Lu CY, and Soumerai SB. Missing Clinical and Behavioral Health Data in a Large Electronic Health Record (EHR) system. Journal of the American Medical Informatics Association. 14 April 2016.

<sup>6</sup> American Medical Informatics Association 23 May 2016 response to Request for Information Regarding Assessing Interoperability for MACRA (<https://www.amia.org/sites/default/files/AMIA-Response-to-ONC-MACRA-RFI-on-Interoperability-Measurement.pdf>)