FINAL REPORT AND RECOMMENDATIONS OF THE ELECTRONIC CLINICAL QUALITY MEASURES DESIGN GROUP

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Report prepared for:

Connecticut Health IT Advisory Council

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Acknowledgements

Executive Summary

The *Final Report and Recommendations of the Electronic Clinical Quality Measures Design Group* is the work of a multi-stakeholder Electronic Clinical Quality Measures (eCQM) Design Group, which was chartered by the Health Information Technology Advisory Council (Health IT Advisory Council) on January 19, 2017 to make recommendations on a statewide system to support the reporting of clinical quality measures in an environment of alternative payment models (APMs).

Over the course of nine weekly meetings and with significant work outside of these meetings, the Design Group met its objectives by developing a central value proposition for a system that is inclusive of all types of data and clinical quality measures (CQMs). It also produced three major deliverables foundational to the development of a statewide quality measurement system:

1. A graphic depiction of the **critical components** of a statewide quality measurement system;
2. A matrix of stakeholder **business requirements** and prioritized quality measurement **use cases**, based on different types of data, to support the business requirements; and
3. A list of **functional requirements** that can be used in the procurement of vendor services for the implementation of a statewide quality measurement system.

The Design Group also outlined **governance, operations, and general recommendations** for a statewide quality measurement system for presentation and further deliberation by the Health IT Advisory Council at its April 20, 2017 meeting.

This report represents the conclusion of the present Design Group's work. However, the Design Group recommends that an additional **statewide quality measurement system oversight group** be formed to take next steps to implement the following statewide quality measurement value proposition:

A statewide system for quality measurement will enable providers and encourage payers to more efficiently participate in successful value-based payment models through:

- Person-centric measures that reflect the clinical care referable to a measure that has been received from all providers, included those who are outside specified networks of providers
- Trusted data and information from a third party with a state-of-the-art security infrastructure; quality assurance program; data governance system that focuses on data integrity, reliability, timeliness; and an overall governance system that is inclusive of stakeholder needs and priorities
- A goal of decreased administrative burden for providers by enabling a system that could allow data senders to submit standardized data and measures once to a single entity, and could eliminate the need for data and measure users to collate and recalculate data and measures from multiple sources

Over time, a robust healthcare delivery system of high-performing organizations will thrive in a value-based payment environment, and will help Connecticut achieve the quadruple aim of better health, better care, lower costs, and improved work life of healthcare providers.

In order to move this important initiative forward, a new statewide quality measurement oversight group must address the following recommendations:

1. Identify and determine how a statewide quality measurement system would interact with and leverage any **existing stakeholder efforts** to produce quality-related information and measures;
2. Determine the **business structure** of such a statewide quality measurement system as independent, quasi-governmental, non-profit, or other;
3. Explore and recommend mechanisms for **financial sustainability** once the system is built and functional;
4. Develop a **governance entity** for the system; and
5. Further engage with a **wider network of stakeholders** within the groups represented on the current Design Group to better understand the challenges of migrating to and using a statewide system.

The Design Group also recommends consideration of a **Request for Proposal (RFP)** that can be used for procurement of a vendor who will be able to meet the needs of all stakeholders for a statewide quality measurement system.

Introduction and Background

Legislation Regarding Health Information Technology in Connecticut

The work of the Electronic Clinical Quality Measures Design Group (Design Group) is ultimately governed by Connecticut state legislation. Connecticut's health information technology (IT) activity is regulated under Public Act 16-77, which replaced the previously-enacted Public Act 15-146. This law establishes Connecticut's Health Information Technology Advisory Council (Health IT Advisory Council) to advise the Health Information Technology Officer (HITO) in developing policy recommendations and priorities to advance the state's health IT and health information exchange (HIE) efforts and goals. In addition, the Health IT Advisory Council advises the HITO in the development and implementation of the statewide health IT plan. The Health IT Advisory Council also advises the HITO regarding the development of appropriate governance, oversight, and accountability measures to ensure success in achieving the state's health IT and HIE goals.

The law also contains provisions for:

- Enhancing interstate and intrastate interoperability using standards and protocols;
- Establishing electronic data standards;
- Requiring privacy standards (HIPAA) and limiting the use of individuals' Social Security Numbers;
- Coordinating health IT and HIE activities to ensure consistent and collaborative cross-agency planning and implementation; and
- Promoting the reuse of enterprise health IT assets, such as a Provider Directory, an Enterprise Master Person Index, Direct Secure Messaging, and Health Information Service Provider (HISP)

State Innovation Model Grant Deliverables

The Design Group's work also supports the Connecticut State Innovation Model (SIM) grant efforts. Connecticut's SIM efforts are grouped into five major goal categories:

1. **Value-Based Payment**
   - Performance measures & Shared Savings Program (SSP) requirements
   - Person Centered Medical Home+ (PCMH+)
   - Public common scorecard for provider performance and deploying Consumer Assessment of Healthcare Providers and Systems (CAHPS)
2. **Care Delivery Reform**
   - Clinical and community integration program technical assistance
   - Advanced Medical Home (AMH)
   - Community Health Worker Initiative
3. **Consumer Empowerment**
   - Value-Based Insurance Design (VBID)
4. **Population Health**
   - Prevention Service Centers
   - Health Enhancement Communities
5. **Health IT**
   - HIE
   - Electronic Clinical Quality Measures (eCQMs)
   - Admission/Discharge/Transfer (ADT) alerting

Expanding Value-Based Payment Environment

The past decade has seen rapid expansion in new healthcare reimbursement methodologies. The Centers for Medicare and Medicaid (CMS) offer over half dozen different models applicable to different settings, with more being developed, tested, and offered annually. The Medicare Access and CHIP Reauthorization Act (MACRA) codifies some of these models and either rewards or penalizes clinicians based on their performance on quality measures, clinical quality improvement activities, cost, and advancing use of health information. Private insurers are also adopting different types of value based payment models across the country. The newest CMS model, Comprehensive Primary Care Plus (CPC+) takes the important step of aligning multiple payers in a region, public and private, to maximize the effectiveness of the program as it seeks to transform how primary care is delivered to meet the goals of better, smarter care and a healthier population.

Connecticut recognizes the importance of value-based payment and included Alternative Payment Models (APMs) as one of the mechanisms supported by its SIM grant to drive accountability, consumer engagement, and high quality of care. The importance of effective and efficient measurement of all aspects of the quality of care provided to the state's population cannot be overestimated and was the basis for supporting a second mechanism: multi-payer alignment on quality, health equity, and care experience measures.

As part of the multi-payer alignment effort, the SIM Quality Council recommended a common set of clinical quality measures (CQMs), some of which came directly from electronic health records (EHRs) for use by public and private payers in their APMs. Statewide implementation and adoption of these measures has been hampered by the lack of an efficient process to capture and report the measures and the data from which they are derived.

Connecticut is not alone in recognizing the need for an efficient statewide quality measurement system that can better support the needs of a healthcare environment moving toward APMs. Many other states are looking to develop similar solutions with any one of a number of different HIE architectures, with each designed to meet the specific needs and existing health IT infrastructures of their state. For example, the Delaware Health Information Network is developing a set of provider "score cards" that can be used by payers, purchasers, other providers, and consumers; Massachusetts has a CQM system operated by a non-profit entity reporting quality measures on behalf of physicians, based on clinical data from the statewide HIE, data from physicians' EHRs, and data from claims. Rhode Island is in the process of procuring a CQM and feedback system. Arkansas, Michigan, New Jersey, and Oregon are also developing shared CQM systems.

In response to the need for a more efficient reporting structure for quality measurement, the Connecticut Health IT Advisory Council chartered the formation of an eCQM Design Group on January 19, 2017, the purpose of which was to identify and recommend the objectives and requirements of a shared, statewide health IT-enabled clinical quality measurement system in the context of APMs.[1]

The goals and objectives outlined in the charter included:

1. Identification of **value propositions** for a statewide system that extends beyond what can be accomplished by individual stakeholders
2. Identification of a set of clearly defined **business requirements** associated with various stakeholders in the APM environment
3. Identification of priority **use cases** that can be enabled by a statewide quality measurement system to support stakeholders' business requirements
4. Identification of a set of agreed upon **functional requirements** for a statewide quality measurement system
5. **Recommendations** for a statewide quality measurement system that realizes value for multiple stakeholders

As the Design Group worked through the business and functional requirements, the group determined that it was important to broaden the concept of the quality measurement system to include more than clinical data (eCQMs). Therefore, it was recommended the phrase **"statewide quality measurement system"** be used to describe the system.

Stakeholder Representation and Membership of Design Group

The Design Group was sponsored by the HITO, governed by the Health IT Advisory Council, and supported by the SIM PMO and CedarBridge Group, in consultation with the Office of the Lieutenant Governor. The following nine stakeholder groups were identified to be represented by Design Group members:

- Healthcare consumers
- Commercial payers
- Community hospitals
- Clinicians
- Federally Qualified Health Centers (FQHCs)
- Behavioral health providers
- Hospital system
- Office of the State Comptroller
- Medicaid Agency

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[1] http://portal.ct.gov/en/Office-of-the-Lt-Governor/Health-IT-Advisory-Council/Health-IT-Advisory-Council---eCQM-Design-Group-2017

The list of Design Group members, including those designated by original invitees, and description of stakeholder representation can be found in Table 1 below.

Table 1: Stakeholder Representation and Membership of Design Group

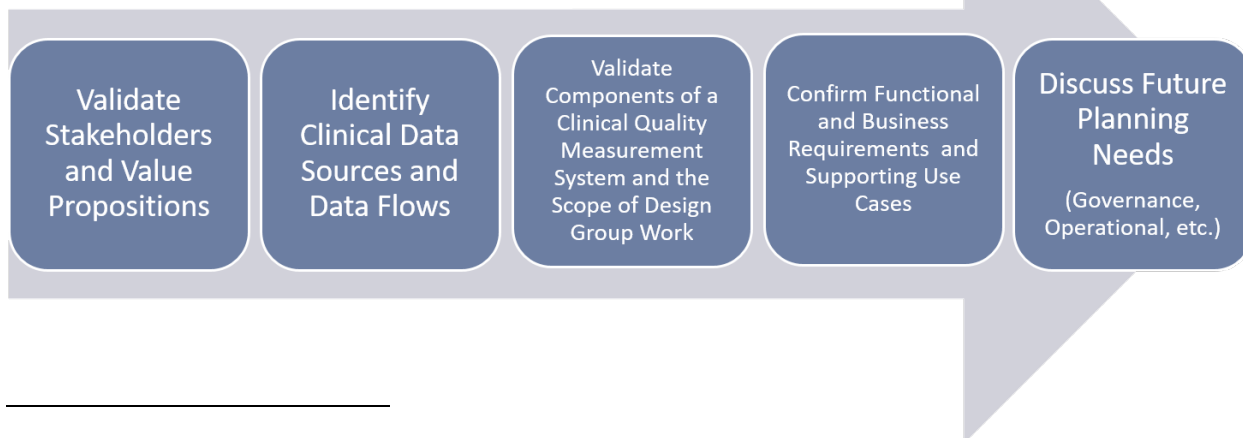| Design Group Member	Stakeholder Representation
Patricia Checko, DrPH, MPH	Provide consumer perspective representation, including engaging the Consumer Advisory Board on key deliberations. The consumer representative should be prepared to speak to the need for transparency of data reflecting the cost, health outcomes, and quality scores of providers and organizations, to inform better consumer decision-making when choosing providers and health plans.
David Fusco, MS	Provide commercial payer perspective representation, including engaging decision-makers within each Connecticut-based commercial payer organization. This representative should be able to speak to the current and planned capacity for payers' health IT-enabled clinical quality measurement processes, value propositions, priority business and use cases, considerations for financing models, and considerations for alignment.
Michael Hunt, DO	Provide clinician perspective representation, including engaging with physician and nursing communities to ensure accurate representation. The clinician representatives should be able to speak to current and planned capacity for clinical data extraction, aggregation, and reporting; priority business and use cases for an aligned health IT-enabled electronic quality measurement system.
Nitu Kashyap, MD **(Delegate of Lisa Stump, MS, RPh)**	Provide hospital and academic medical center perspective representation, including engaging the large system provider community to ensure accurate representation. This representative should able to speak to current and planned large hospital system capacity for clinical data extraction, aggregation, and reporting; priority business and use cases for an aligned health IT-enabled electronic quality measurement system.
Robert Rioux, MA	Provide broad FQHC perspective representation. The representative for FQHCs should be able to speak to current and planned FQHC capacity for clinical data extraction, aggregation, and reporting; priority business and use cases for an aligned health IT-enabled electronic quality measurement system.
Nicolangelo Scibelli, LCSW	Provide behavioral health provider (clinician and multiple settings of care) perspective representation. The representative of behavioral health should be able to speak to the level of adoption and the challenges of most behavioral health EHR systems' technical ability to collect and extract quality measures in standard formats and opportunities to provide the behavioral health provider community training, education, and workflow support to improve their ability to participate in APMs and quality improvement initiatives.
Craig Summers, MD (designee of Joseph Quaranta, MD)	Provide clinician perspective representation, including engaging with physician and nursing communities to ensure accurate representation. The clinician representatives should be able to speak to current and planned capacity for clinical data extraction, aggregation, and reporting; priority business and use cases for an aligned health IT-enabled electronic quality measurement system.

Thomas Woodruff, PhD	Provide Office of the State Comptroller (OSC) representation, particularly as it relates to its commercial payer health benefit contracts for state employees. The OSC representative should be able to speak to OSC's current and planned efforts leveraging their commercial contracts to promote the use of clinical data extraction, aggregation, and reporting; and the priority business and use cases they see for leveraging purchasing power to incentivize providers to participate in APMs and quality improvement initiatives.
Department of Social Services Representative[2]	Provide Medicaid perspective representation. This representative should be able to provide a clinician's perspective regarding the current and planned capacity of Medicaid's clinical quality measurement processes, value propositions, and priority business needs and process use cases.

Design Group Process

The Design Group conducted its work across a period of two and a half months in a series of nine meetings. The kick-off meeting on February 16, 2017 afforded the opportunity for all participants to introduce themselves, the stakeholder group(s) they represent, and their interest in supporting a statewide system for quality measurement development and reporting. The meeting was also the context for a robust discussion on the need to include measures that are based on data from multiple sources, which led to amending the purpose statement before approval of the charter.

The restated purpose of the Design Group became "*to identify the objectives and requirements of an efficient, shared, statewide health IT-enabled electronic clinical quality measure solution that can extract, aggregate, and analyze relevant data from existing clinical sources (e.g. EHRs and registries) in the context of APMs. The Design Group may consider future requirements related to the integration of data from other electronic sources such as claims, patient-generated data, and state-sponsored databases.*"

Figure 1: eCQM Design Group Roadmap

Validate Stakeholders and Value Propositions → Identify Clinical Data Sources and Data Flows → Validate Components of a Clinical Quality Measurement System and the Scope of Design Group Work → Confirm Functional and Business Requirements and Supporting Use Cases → Discuss Future Planning Needs (Governance, Operational, etc.)

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[2] Representatives of the Department of Social Services (DSS) were invited to participate in the Design Group; however, DSS participation in weekly Design Group meetings did not take place. DSS provided a consolidated response to the Design Group Final Report and Recommendations and met with Allan Hackney, Dr. Karen Bell, and a member of the Design Group on April 17, 2017 to review and discuss their response in detail.

In the following eight meetings, the Design Group worked through successive cycles of identification, discussion, and validation of various topics, as depicted in Figure 1.

For each meeting, the Design Group reviewed and affirmed the agenda and work plan for the meeting, and validated the outcomes of the previous session's work as presented by the facilitator, offering any final suggestions or feedback. At each meeting, newly-introduced topics were reviewed and discussed. Between meetings, extensive individual outreach by CedarBridge Group took place with Design Group members to solicit feedback and ensure collaboration with and engagement of all Design Group members. All discussion, whether gathered in a group setting or one-on-one with facilitators, was synthesized and incorporated into the validation agenda item(s) of the following meeting.

In addition, the Design Group reviewed and validated deliverable documents created through the course of the project, and formulated recommendations to the HITO and to the Health IT Advisory Council, as described below.
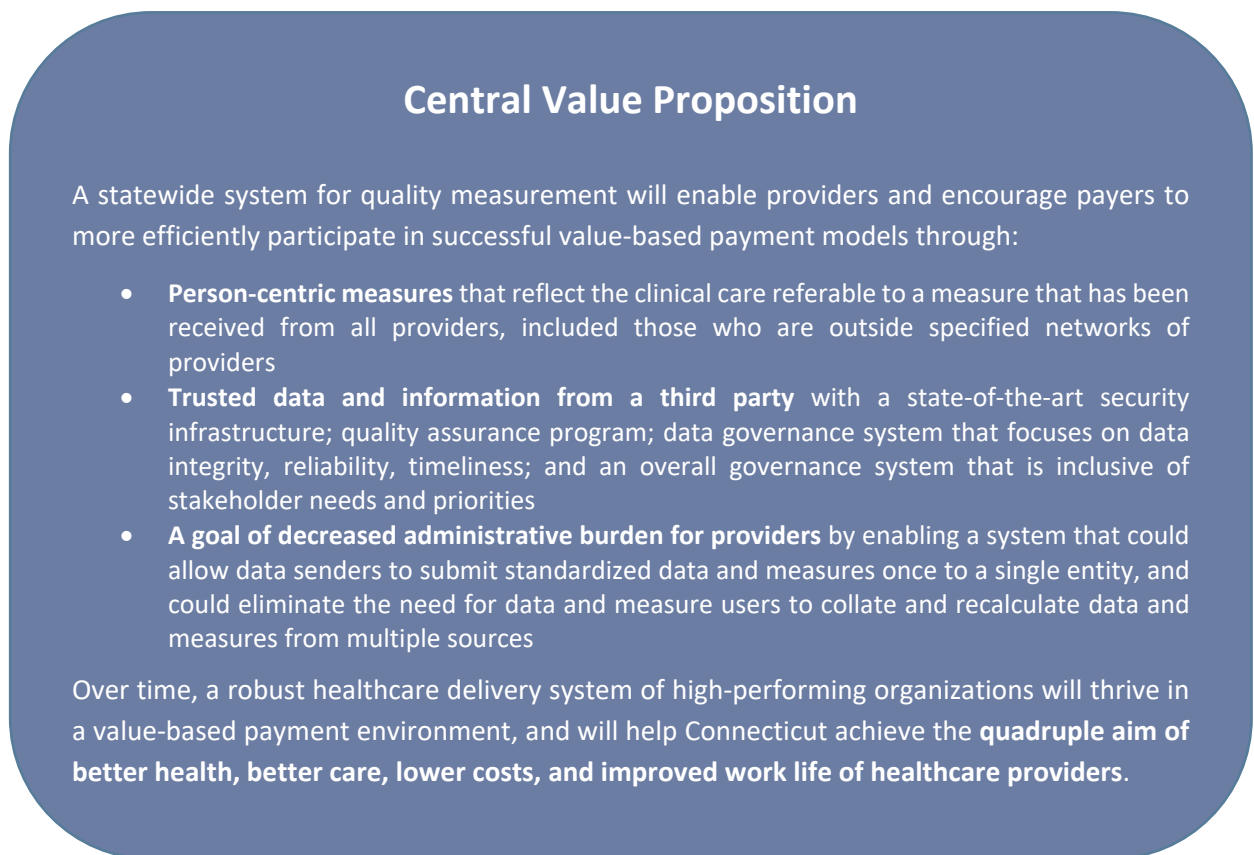
Key Deliverables of Design Group

All Design Group deliberations and discussions were collated into four discrete deliverables: a central value proposition for a statewide quality measurement system; a graphic depicting the key components of such a system; a matrix capturing stakeholder business requirements and use cases describing how a statewide quality measurement system could support them; and a list of functional requirements necessary to meet stakeholder needs.

Central Value Proposition of a Statewide Quality Measurement System

Quality measures have the potential to be of value to all stakeholders in health and healthcare, including providers of all types; purchasers (payers, employers, and consumers); patients; public health; state-based services, community-based organizations, and those conducting health services research.

Clinical quality measures are predominantly being used to support quality improvement initiatives and incentive payment programs based on data that is generated by individual stakeholders. After exploring current uses of clinical quality measures, the Design Group identified three unique value propositions of a statewide system inclusive of all relevant data sources that would better support the goals of value-based payment as it focuses more on patient needs and outcomes. A Central Value Proposition was developed and validated to anchor subsequent discussions, as seen in Figure 2: Central Value Proposition of a Statewide Quality Measurement System.

Figure 2: Central Value Proposition of a Statewide Quality Measurement System

Central Value Proposition

A statewide system for quality measurement will enable providers and encourage payers to more efficiently participate in successful value-based payment models through:

- **Person-centric measures** that reflect the clinical care referable to a measure that has been received from all providers, included those who are outside specified networks of providers
- **Trusted data and information from a third party** with a state-of-the-art security infrastructure; quality assurance program; data governance system that focuses on data integrity, reliability, timeliness; and an overall governance system that is inclusive of stakeholder needs and priorities
- **A goal of decreased administrative burden for providers** by enabling a system that could allow data senders to submit standardized data and measures once to a single entity, and could eliminate the need for data and measure users to collate and recalculate data and measures from multiple sources

Over time, a robust healthcare delivery system of high-performing organizations will thrive in a value-based payment environment, and will help Connecticut achieve the **quadruple aim of better health, better care, lower costs, and improved work life of healthcare providers**.

Components of a Statewide Quality Measurement System

Discussions that led to the Central Value Proposition also recognized administrative burden would decrease only if the system processed *all* types of clinical quality measures, using all available data types: clinical data, claims data, and other data that influence healthcare as they become available. Examples of these influencers include social determinants of health, person-generated data, environmental data, and vital records.

It was discussed by the Design Group that processing clinical data derived only from EHRs, registries, laboratories, imaging centers, and pharmacies would still require providers to report other clinical quality measures through multiple existing channels. Further discussions focused on a more comprehensive statewide quality measurement system that could process different types of quality measures.

Consensus on components and attributes of a statewide quality measurement system was developed over time. Primarily, the system must be based on a strong foundation of governance. The system should focus on quality measures and any data that will be used to calculate quality measures, understanding that these will change over time from predominantly *process* measures to predominantly *outcome* measures. The system should not contain all data and information relative to care across the continuum on any given patient, but should be limited to data important to assess quality of care and contributing factors. It should, over time, include information on social determinants of health; patient reported outcomes; patient-generated health data; data from community-based services, state, and local agencies;

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geographic data, and educational data. Such data would not only be used to measure quality, but to identify and assess factors contributing to the population health of the people of Connecticut, and opportunities to focus on improving the state's healthcare systems.

Figure 3 outlines in graphic form the critical components of a statewide quality measurement system that can perform the following functions:

- Interface with multiple data sources;
- Transport measures and data securely to and from those sources;
- House and manage data and information in a secure repository; and
- Provide analyses, insights, and expansion of current knowledge base on assessing and improving healthcare.

Figure 3: Critical Components of a Statewide Quality Measurement System
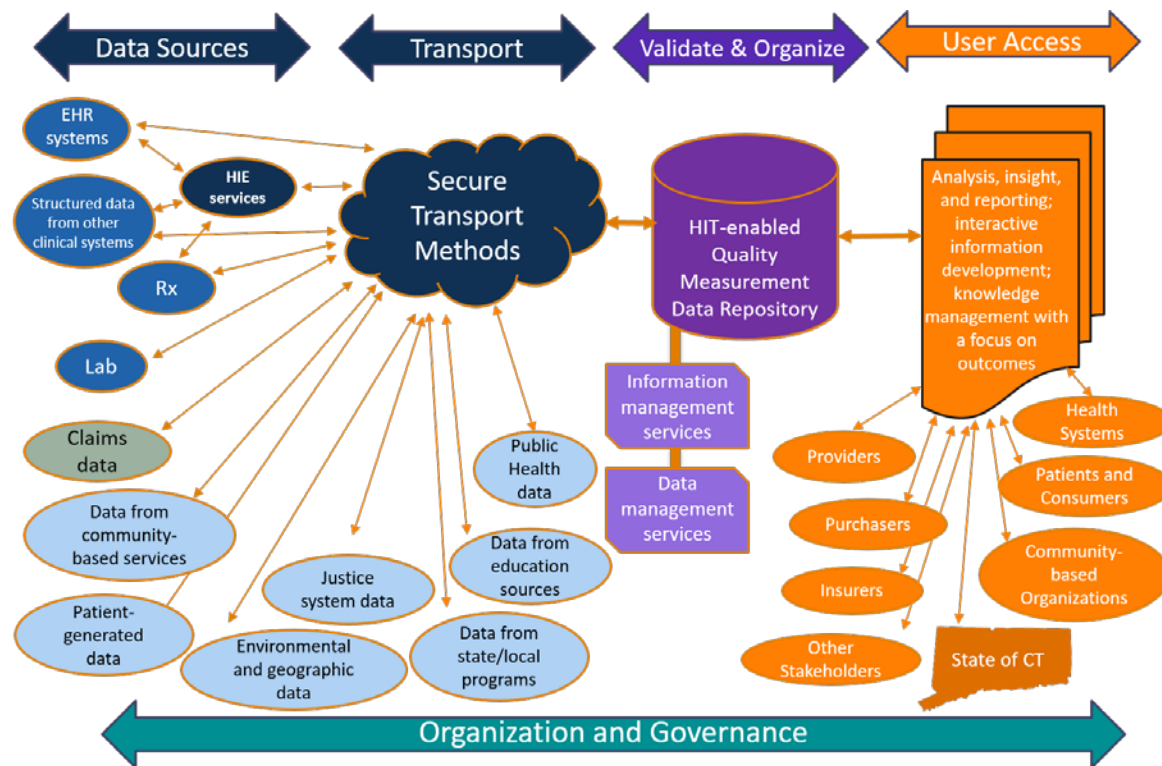
Figure 3 became foundational for further Design Group work on stakeholder business requirements, use cases, and the functional requirements of a statewide quality measurement system, and reflects the vision set forth by the central value proposition.

Business Requirements of a Statewide Quality Measurement System

The APM environment changes the business models of all healthcare stakeholders. Provider revenue is no longer primarily driven by volume or the price of various services; payers are offering more varied products to their members; and consumers and patients are at a greater risk for the cost of care and are encouraged to assume some responsibility for their own health. In this environment, there is also a growing emphasis on the overall health of any given population. The Design Group spent several meetings

discussing the business requirements of each of the stakeholder groups affected by value-based payment. Some of these business requirements are important to multiple stakeholders, some are specific to one stakeholder group, but all are critical to success in meeting the common goals of better care, smarter spending, and better health while maintaining a positive quality of life among clinicians.

Business requirements may be defined as the structures and processes that should be in place to benefit an enterprise as a whole. At a project level, business requirements also include the reasons and objectives for the project. These requirements should be stated from a business perspective; that is, not specific to any one stakeholder within the business entity but from the perspective of an overall business environment. Key business requirements in the APM environment, their stakeholders, and examples of their supporting objectives as outlined by the Design Group are listed in Table 2.

Table 2: Business Needs in a Value-Based Payment Environment (Per Stakeholder)

Clinical Quality Improvement Activities (Providers)

- Required by the Medicare Access and CHIP Reauthorization Act (MACRA) for enhanced payments
- May be required by other certifying bodies [The Joint Commission and National Committee for Quality Assurance (NCQA) for Patient-Centered Medical Home (PCMH) Certification]
- Planning for quality improvement initiatives as new measures are adopted

Care Coordination and Management of Specific Patient Cohorts (Multiple Stakeholders)

- Decrease costs associated with preventable emergency room visits
- Decrease costs associated with preventable hospital admissions
- Improve patient quality of life and ability to work and function

Integration of Care Between Physical Health and Behavioral Health (Multiple Stakeholders, Including Consumers)

- Improve health outcomes in patients with chronic medical and behavioral health conditions
- Decrease total cost of care in patients with chronic medical and behavioral health conditions

Development of Value-Based Contracts with a High-Quality and Lower-Cost Network of Providers (Payers)

- Increase market share by offering purchasers of health plans (employers and individuals) high-value networks of providers
- Maintain high-value network for NCQA Certification

Accurate Calculation of Performance Measures Related to Incentive Reimbursement (Providers)

- Accurate adjudication of performance incentive payments may increase reimbursement
- Decrease administrative burden associated with rectification of measure disparities

Transparency of Healthcare Quality Measures (Multiple Stakeholders, Including Consumers)

- Access to benchmark data identifies improvement opportunities (providers)
- Efficient access to complete data on providers and populations (all stakeholders)

Transparency of Healthcare Costs (Multiple Stakeholders, Including Consumers)
• Consumers need to know what care will cost them
• Complicated by different co-pays, deductibles, and reimbursement rates across providers
Development of Targeted, Effective, and Efficient Public Health Programs at the State, Regional, and Community Levels (All Residents of Connecticut)
Administrative Efficiency (Payers and Providers)
• Decrease administrative burden of reporting to multiple quality programs
Research on Public Health Programs and Health Services, and Program Evaluation at All Levels (Multiple Stakeholders)
• Goal of an efficient and effective health system for Connecticut that meets the Quadruple Aim
Patient and Consumer Engagement
• Improve patient activation
• Improve adherence to treatment

It is important to note that the need for public transparency in costs of care is an important requirement for multiple stakeholders, especially consumers of health services who may be at risk for some of the cost and may or may not seek needed care if the perceived cost is too high. The Design Group noted the importance of including this business requirement, but recognized implementation of this requirement will need more consideration.

Connecticut's All Payers Claims Database (APCD) is still in early stages. The APCD may be utilized for cost transparency in the future, depending on a number of factors related to functionality and governance. How and when public cost transparency will be implemented is dependent on an overall governance structure that can work with all stakeholders on how to best address this need.

Priority Use Cases of a Statewide Quality Measurement System

Use cases describe how data can be gathered and analyzed in support of a specific business need. The Design Group identified priority use cases for each of the stakeholder business requirements, based on three types of quality data:

1. **Clinical Data:** Clinical data is structured data from EHRs, registries, clinical laboratories, imaging centers, pharmacies, and remote monitoring devices tracking physiological parameters. The clinical data include basic demographic information and encounter data on each patient; provide access to clinical outcomes such as laboratory and imaging results, vital signs, and clinical assessments; and have the advantage of being close to real time.

2. **Claims Data:** Claims data is structured data generated by payments to providers. This data includes who provided what service, to whom, and on what date; where the service was provided; and diagnoses. There is a lag time between time of service and final claims of up to three months. The specificity of claims data has improved with migration to ICD-10 with more granularity of a healthcare provider's services captured. However, it does not include data about care or medications that a patient may have paid out of pocket. The ability to integrate claims data with

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clinical data adds value in the quality measurement process by eliminating the need for manual chart extractions for hybrid measures.

3. **Multi-Source Data:** Some structured, but mostly unstructured, data from community services, environmental sources, state and federal agencies, and patients that influence use of healthcare services. These data also assess the overall health of an individual or population and include health outcomes such as quality of life, functional assessments, and patient-reported results of care.

The Design Group collated priority use cases by stakeholder business requirement and available data type in a matrix in Appendix A. This matrix was designed to form the basis for continued discussions within and among stakeholder groups and will help guide the prioritization efforts of the governance entity that will be providing direction and oversight as the statewide quality measurement system is developed and implemented.

Functional Requirements of a Statewide Quality Measurement System

The Design Group identified the components of a statewide quality measurement system dependent on specific functional requirements that a system developer must be able to provide. These functional requirements are outlined in Appendix B for the creation of a statewide quality measurement system, organized by the following categories:

- Data Collection
- Data Transport
- Data Validation
- Data Attribution
- Data Aggregation and Normalization
- Data Measurement
- Measure Calculation
- Measure Reporting
- Results Dissemination
- System Access and Security
- Patient Consent

Recommendations

The Design Group deliberated and identified several governance, operations, and general recommendations for a statewide quality measurement system that were beyond the scope of its work but will be important for discussions related to further develop and implement such a system.

Governance

Governance is the foundational component of a successful statewide quality measurement system. Organizational governance is responsible for an entity's mission, vision, and strategy (including goals and objectives); fiduciary health, policies, and adherence to legal requirements; prioritizing programs and processes; and assuring adequate operational resources. Governance of a statewide quality measurement system must ensure the patient remains the "north star" in guiding decisions on system design and use,

enabling transparency and quality improvement across organizations and programs contributing to the health of individuals and of the population as a whole.

The Design Group recommends that a **governing entity** be established to address the following governance needs of a statewide quality measurement system:

1. **Governance authorities** and type of entity needed (non-profit, quasi-governmental, etc.);
2. **Compliance** and **auditing mechanisms**;
3. Accountability to and **transparency with stakeholders**;
4. The creation of **bylaws and policies** to guide stakeholder representation;
5. The maintenance of a **policy framework**;
6. The creation of a **clear decision-making process**;
7. The creation of principles to guide **prioritization of programs and processes**;
8. A well-defined **relationship between the governance entity and operations**;
9. The development of a **sustainable business model** for operations; and
10. The creation of a **data governance process** to maintain data integrity.

Operations

The Design Group also identified several operational issues and recommends that the following be addressed as part of any future efforts:

1. The **hiring and retention of experienced staff** with skill in all areas of operations;
2. **Interoperability with existing health IT infrastructure**, such as patient and provider directories or other sources of aggregated data (including the state's APCD) to whatever extent possible
3. **Electronic consent management;**
4. The development of **quality assurance and quality control programs** that address data inputs and outputs at their source, and allow for rectification and reconciliation of discrepancies; and
5. The development of **technical assistance and communication program**s that will enable ease and efficiency for those who provide and extract data and measures.

General Recommendations

Several other general recommendations to guide the process of the development of a statewide quality measurement system have been developed by the Design Group below. The development of a statewide quality measurement system:

1. Should focus on the **Quadruple Aim** of better health, better care, lower costs, and a positive healthcare workforce;
2. Should keep the **patient as the "north star"** with a vision for a person-centered system;
3. Should incorporate all types of **quality-related, structured data**; and ingest and create quality measures from different data sources;
4. Should include the Design Group's **Functional Requirements**;
5. Should interface with **provider-specific reporting systems** (such as behavioral health and long-term and post-acute care providers) to whatever extent possible;
6. Should adopt specifications for **aligned measures** as they become available [through the efforts of CMS, America's Health Insurance Plans (AHIP), and other national initiatives];

Better health / Better care / Lower costs

Improved work life of healthcare providers
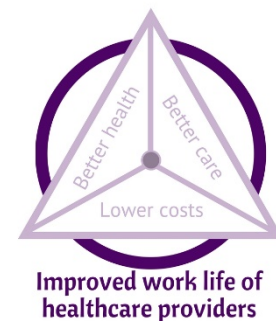
7. Should maintain **flexibility** as quality measurement improves from measuring processes to measuring outcomes, including patient-reported outcomes;
8. Should integrate with **other components of Connecticut's health IT infrastructure**, including the state's APCD;
9. Should address **transparency of costs** and availability of public-facing data over time; and
10. Should recognize the **key challenges** that will be faced as the system is implemented.

The Design Group also articulated specific challenges to the implementation of a statewide quality measurement system, including the management of stakeholder expectations. Considerations related to these challenges are listed below:

1. **Quality measures** are a part of a larger spectrum of quality of care. The science of assessing the quality of care rendered by any one provider or provider type is still immature, and most quality measures focus on effective care processes that occur frequently enough to have some degree of reliability. However, effectiveness of care is only one of six quality measures published by the Institute of Medicine (IOM) as essential to improve healthcare (the others measures are safe, patient-centered, timely, efficient, and equitable).[3] Clinician experience, in-depth knowledge of specific patients, sound judgment, and working in a learning environment are also unmeasurable but important aspects of quality care, thus clinical quality measures cannot be solely used for APM conclusions.
2. There are **limitations** on the degree to which quality measurement can lead to solutions that truly improve the overall care of patients**.** Overemphasis on isolated measures instead of comprehensive care may not produce the desired result of healthier patients.
3. Data in a statewide quality measurement system are **not a comprehensive view** of all patient care across the healthcare continuum;
4. **Accrued value** to stakeholders will not be realized in the same timeframe for all stakeholders. Stakeholder engagement for those who will experience delays in realizing value may be a challenge.
5. **Data quality** varies depending on data providers. Variance in the quality of data will need to be acknowledged and addressed.
6. The **level of readiness** for EHRs to interface with a statewide quality measurement system varies across providers. There are multiple EHR vendors operating in the state, and an EHR vendor may customize data tables for each of its installations such that interfaces may vary even among providers with the same vendor.
7. Changing **data and measurement reporting patterns** may initially increase operating costs for providers and users. Cost absorption for connecting to a statewide quality measurement system must be addressed.

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[3] http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2001/Crossing-the-Quality-Chasm/Quality%20Chasm%202001%20%20report%20brief.pdf

Summary and Next Steps

The eCQM Design Group is pleased to have been able to meet the charge, goals, and objectives of its charter in the timeframe provided. It has presented the following for the Health IT Advisory Council's consideration:

- A strong **value proposition** for a statewide quality measurement system that can efficiently calculate and report on all types of quality metrics;
- An outline of the **components** of such a system;
- The identification of key **business requirements** of multiple stakeholders in the APM environment along with **use cases** based on quality data and metrics that could support these business requirements; and
- A validated list of **functional requirements** that may be used in the procurement process for the system.

Together, these work products and the accompanying governance, operational, and general recommendations build a strong foundation for next steps toward a statewide quality measurement system. However, there is still much work to be done to realize how a statewide quality measurement system can support the vision of better care, smarter spending, better health, and better work life for providers. The Design Group recommends a **Request for Proposal (RFP)** to procure a vendor to meet the needs of all stakeholders for a statewide quality measurement system, and that **an additional statewide quality measurement oversight group be formed** to:

1. Determine the **business structure** of such a statewide quality measurement system as independent, quasi-governmental, non-profit, or other;
2. Explore and recommend mechanisms for **financial sustainability** once the system is built and functional;
3. Develop a **governance entity** for the system; and
4. Further engage with a wider network of **stakeholders** within the groups represented on the current Design Group to better understand the challenges of migrating to and using a statewide system.

Appendices

Appendix A: Business Requirements and Use Case Matrix

Business Needs in a Value-Based Payment Environment (per stakeholder)	Clinical Data Use Cases	Clinical and Claims Data Use Cases	Multi-source Data Use Cases
Bullets in this column outline reasons and objectives of the business requirement in the value based payment/accountable care environment	*Definition: Clinical Data Use Cases are measures and data using clinical data from Electronic Health Records (EHRs), registries, laboratories, pharmacies, etc. (includes basic demographic data)* ***Unique features: Close to real-time availability and includes data on clinical outcomes***	*Definition: Clinical and Claims Data Use Cases are measures and data using currently available claims data (with lag period from time of care) integrated with clinical data* ***Unique features: Claims include a full picture of who has provided what healthcare services to whom, when, and where; useful for measuring processes associated with quality care***	*Definition: Multi-source Data Use Cases are measures and data from non-clinical sources: community services, state based services, social determinants, Public Health, other state programs, patients, etc.* ***Unique features: Includes data that <u>influence</u> use of healthcare services not captured by either claims or clinical sources. Much, though not all, of these data currently not in structured format***
Clinical quality improvement activities (providers) • Required by the Medicare Access and CHIP Reauthorization Act (MACRA) for enhanced payments • May be required by certifying bodies, current and future [for example, The Joint Commission and National Committee for Quality Assurance (NCQA) for Patient-Centered Medical	**Identify *true* gaps in care and clinical outcomes** *based on assessing care received from all providers and settings*	**Identify where care has been received outside of attributed network** **Identify opportunities to develop clinical quality improvement programs** *based on complete cost and quality data for each attributed patient*	**Identify contributing factors (social, environmental, and other factors) impacting the health of the patient population targeted for improvement**

Business Needs in a Value-Based Payment Environment (per stakeholder)	Clinical Data Use Cases	Clinical and Claims Data Use Cases	Multi-source Data Use Cases
Home (PCMH) Certification] • Planning for quality improvement initiatives as new measures are adopted			
Care coordination and management of specific patient cohorts (multiple stakeholders) • Decrease costs associated with preventable emergency room visits • Decrease costs associated with preventable hospital admissions • Improve patient quality of life and ability to work and function	**Track clinical outcomes on all patients with specific chronic conditions** *including through care received outside of the attributed network*	**Identify high risk patient cohorts** **Identify where care has been received outside of the attributed network**	**Identify patients at high risk for poor outcomes** *attributable to social issues* **Identify patients who may benefit from population-based interventions** *available in the community (e.g. Prevention Service Agencies as described in the SIM Population Health Plan)*
Integration of care between physical health and behavioral health (multiple stakeholders, including consumers) • Improve health outcomes in patients with chronic medical and behavioral health conditions • Decrease total cost of care in patients with chronic medical and behavioral health conditions	**Monitor clinical outcome measures (e.g. Hgb A1c, episodes of depression) in patients with co-morbid conditions**	**Analyze patterns of care in patients utilizing behavioral health and physical health services** *Can be used for predictive modeling and to plan treatment*	**Monitor composite outcome measures (e.g. quality of life, functional assessments) in patients with co-morbid conditions** **Identify patients who may benefit from community-based interventions**

Business Needs in a Value-Based Payment Environment (per stakeholder)	Clinical Data Use Cases	Clinical and Claims Data Use Cases	Multi-source Data Use Cases
Develop and evaluate value based payment contracts and networks (payers) • Efficient access to a standard set of clinical, claims, and patient reported quality measures **Develop and evaluate value-based payment contracts and networks (payers) [continued]** • Efficient access to a comprehensive view of quality measures across all patients of a network provider	**Provide composite clinical outcomes for clinical measures on a payer's full membership** **Provide aggregate outcome measures on all of a given providers' patients**	**Integrate clinical and claims measures electronically as needed for reporting purposes** **Aggregate provider-specific quality measures using both clinical and claims data on all of a given provider's patients**	
Accurate calculation of performance measures related to incentive reimbursement (providers) • Accurate adjudication of performance incentive payments may increase reimbursement • Decrease administrative burden associated with rectification of measure disparities	**Identify true data gaps related to clinical outcome measures** *by providing information on care that may occur outside of the provider-attributed network*	**Identify where and when care has been received outside of the attributed network**	

Transparency of healthcare quality measures (multiple stakeholders, including consumers) • Access to benchmark data identifies improvement opportunities (providers) • Efficient access to complete data on providers and populations (all stakeholders)	Report accurate outcome quality measures based on clinical data to a public-facing website	Report accurate process and outcome quality measures based on clinical and claims data to a public-facing website	
Transparency of healthcare costs (multiple stakeholders, including consumers) • Consumers need to know what care will cost them • Complicated by different co-pays, deductibles, and reimbursement rates across providers	For future discussion	For future discussion	
Development of targeted, effective, and efficient Public Health programs at the state, regional, and community levels (all residents of Connecticut)	Identify relationships between demographic information and specific clinical outcomes *to support community and geographic assessments, health equity programming, and resource planning*	Calculate cost of care for specific populations and clinical outcomes	Evaluate equity across regions, conditions, and social determinants

Administrative efficiency (payers and providers) • Decrease administrative burden of reporting to multiple quality programs		**Function as a single reporting source for all required clinical quality measures** *(providers to multiple payers and payers from multiple providers)*	**Provide quality of care-related information from multiple data sources easily and efficiently**
Research on public health programs and health services, and program evaluation at all levels (multiple stakeholders) • Goal of an efficient and effective health system for Connecticut that meets the Quadruple Aim	**Perform program evaluation at multiple levels** *with respect to efforts to improve clinical outcomes*	**Multiple use case opportunities to partner with academic, commercial, and governmental entities** *for purposes of health services research*	**Multiple use case opportunities for partnerships with multiple stakeholders,** *including academic, commercial, and governmental entities, to conduct health services research in a knowledge management environment*
Patient and consumer engagement • Improve patient activation • Improve adherence to treatment	**Provide access to patient views on comparing his/her clinical outcomes with others with similar conditions**	**Provide a personal "scorecard" to each patient** *demonstrating a patient's alignment with recommended care*	**Provide health risk assessments** to patients based on their alignment with recommended care, their clinical outcomes, and their social determinants of health

Appendix B: Statewide Quality Measurement System Functional Requirements

Data Collection
The Statewide Health IT-enabled Quality Measurement System (System) should be able to **query for and retrieve (pull) data via nationally-recognized standards** including, but not limited to: HL7, version 2 and Fast Healthcare Interoperability Resources (FHIR).
The System should be able to **receive data in flat files**, including in Excel and comma separated value (CSV) formats.
The System should be able to **collect complete, accurate, and timely discrete data elements,** including but not limited to: lab results, prescription history, demographic data (including age, gender, zip code, race and ethnicity), vital signs, diagnoses, immunizations, radiology reports, images, and socio-economic data, when available.
The System should be **interoperable** with electronic health record systems (EHRs) and EHR interoperability modules, health information exchange (HIE) platforms, data warehouses, commercial labs, Connecticut's Department of Public Health laboratory and registries, Surescripts, Connecticut Prescription Monitoring and Reporting System (PMRS), radiology systems, and Application Programming Interfaces (APIs).
The System should have the capacity to **incorporate socioeconomic indicators and other data that suggest social determinants of health when these data are available, now and in the future,** as structured elements or through Natural Language Processing (NLP).
The System should have the capacity to collect **race and ethnicity data** as available in standardized format in EHRs and other contributing data systems.
The System must be **scalable and flexible** to allow for the ability **to add clinical data** for any future clinical measures agreed upon through a measures governance process, including measures that utilize custom specifications.
The System must be **scalable and flexible** to allow for the ability **to add claims data** for any future cost and quality measures agreed upon by through a measures governance process.
The System must be **scalable and flexible** to allow for the ability **to add other data (community, environmental, educational, patient-reported, etc.)** for any future health status measures agreed upon by through a measures governance process.
Data Transport
The System should be able to **send data (push) or receive data (via push and pull)** via web services, FHIR (APIs, messaging, etc.), or other standards such as DIRECT secure messaging [External Data Representation (XDR) and Simple Mail Transfer Protocol (SMTP)].

Data Validation
The System should include the implementation of Production and non-Production **(test) instances** for testing (interface build, software updates, etc.).
The Production and non-Production Systems must have the electronic capability to **validate the data fields** collected [alphabetic, numeric, dates, Uniform Resource Locators (URLs), etc.].
The System must support the **timely and accurate adjudication of performance based incentive payments** to providers participating in value-based payment models.
The System should allow **stakeholders to audit or otherwise verify accuracy of measure calculations at the patient level** and a **process for correcting errors.**

Data Attribution
The System must use sophisticated methods of **attribution logic and** securely reconcile different attribution methodologies **to link patients to providers**.
The System must be able to impose a complex set of **business rules** on incoming data feeds, including: - Creation of a unique patient identifier to support accurate attribution - Attribution of all care and services accessed by a patient to an assigned primary care provider or other provider regardless of who provided the care. - Attribution of all care and services accessed by a patient to organizations, based upon attributed provider - Ensuring appropriate linkage of patient data across various message types and submitters - Assigning patients to a payer based upon a defined reporting period

Data Aggregation and Normalization
The System should support users **in identification of cohorts** of individuals using a variety of parameters, including **demographic, clinical, and cost data, as well as race and ethnicity and other data related to social determinants of health** where such data is available in standard formats or through NLP.
The System should be able to **identify cohorts of high-risk patients using predictive modeling** algorithms and support stratification within the cohorts by clinician, practice, organization, community, and public health levels.
The System must have a clearly-defined process to **normalize clinical data** across submitting organizations in order to increase comparability of data from disparate sources

Data Measurement
The System must support end users **by providing data** at the individual patient level, practice/facility level, and organization level.
The System must **evaluate the effectiveness of integrated care on health outcomes** across stratified populations.

Measure Calculation
The System should be able to **securely build and perform measure calculations** on data received from many data contributors, including behavior health measures as they become available. These sets of measures will be determined in partnership with the state and data submitters and contain only standardized measures that are pre-defined in detail.

The System should have flexibility to **perform quality measure calculations** from a variety of standard quality measure sets including those endorsed by the National Quality Forum (NQF) and including, but not limited to, those established by:
 	
 - The Joint Commission
 - The Centers for Medicare and Medicaid Services (CMS)
     o Advancing Care Information
     o Medicare Shared Savings Program (MSSP)
     o Merit-based Incentive Payment System (MIPS)
     o Advanced Alternative Payment Models (APMs)
 - The Health Resources Services Administration Uniform Data Set (HRSA UDS)
 - The National Committee for Quality Assurance (NCQA)
     o Healthcare Effectiveness Data and Information Set (HEDIS)
     o Patient Centered Medical Home (PCMH)
 - Medicaid EHR Incentive Payment Program / Meaningful Use (MU)
 - The core measures outlined in the Report of the Connecticut Quality Council on a Multi-Payer Quality Measure Set for Improving Connecticut's Healthcare Quality

The System should have the ability to represent different measure definitions for the same clinical concept as well as provide versioning and historical data retention.
In calculating measures, the System must be able to **address specific inclusion criteria, specific exclusion criteria, variable measurement periods**, **and data provenance** including data that was collected outside of a measurement timeframe.
The System should, over time, **allow stakeholders to create measures customized for internal use**.
The System must have **sorting/filtering functionality** that includes, but is not limited to, filtering data by date range, organization, practice locations, individual provider, individual patients, patient morbidity and comorbidity cohorts, race, ethnicity, gender, birth date ranges, etc., and the ability to exclude measures below a set minimum threshold number of attributed patients.

Measure Reporting
The System must be **interoperable** with all data systems collecting quality measures and quality measurement data from providers participating in the CMS Quality Payment Program (QPP), including for MIPS, MSSP, Advanced APMs, and other value-based payment models and payments.
The System should be approved by CMS as a **Qualified Clinical Data Registry (QCDR)** with phasing in of test measures but requiring full calculation of all measures by some end date to be determined.
The System will demonstrate improvement in meeting the QCDR reporting requirements for CMS-approved measure sets in 2018 and 2019, and will be expected to meet 100% of the QCDR measure reporting requirements by an end date to be determined.

Results Dissemination
The System should **support users in preparing reports** that aid in evaluating the effectiveness of service and clinical programs represented in the data, including population health indices with respect to health equity and disparities in care.
The System must support clinical quality improvement activities with **individual and aggregate-level data, reports, and dashboards** that are easily customizable and can display data at the **patient level, provider level, practice level, Accountable Care Organization (ACO) or organization level, payer level and statewide level,** in a variety of depths to meet the needs of system users as defined by these users.
The System should include **consumer-facing web access to quality and cost reports**, the timing and details of which would be determined by a governance process.

System Access / Security
The System must conform to robust privacy and security standards, including the requirement for **two-factor authentication to validate user identity.**
The System must support **role-based access** for a variety of end user roles.
The System must **map all individual and organizational demographic data fields as closely as possible to a statewide provider directory system**, if such a system is determined through a governance process to be part of a modular technical architecture for interoperable health IT systems in Connecticut.

Patient Consent
The system should have a process in place that allows patients to grant or revoke consent to the use of their data for the purpose of measuring quality of care.