Colorado Office of eHealth Innovation

Master Patient Index and Master Provider Directory

Draft Business and Functional Requirements

February 8, 2017

The Colorado Office of eHealth Innovation has released this document to receive public comment. Any individual, stakeholder group, vendor, or company is encouraged to offer written comments for consideration. To submit written comments:

- Submit all comments to RFPQuestions@state.co.us
- All comments and questions should be received no later than March 2, 2017.
- Provide all comments in an MS-Excel Spreadsheet or MS-Word Document. It is preferred, but not required, that comments on specific items lists in the document (i.e., Business Needs, Use Cases, Functional Requirements) are provided utilizing the following the layout:

ID (reference as provided in the document)	Question/Comment

Comments on the following topics are encouraged:

- Does the General Information Section provide enough information on the history, guiding principles, and objectives of this project?
- For the specific Business Needs, Use Cases, Functional Requirements:
  - Are the descriptions correct and understandable? If not, please provide additional wording or clarifications.
  - Are any Business Needs, Use Cases, Functional Requirements missing? If so, please provide additional detail.
  - Are they in the correct phase as provided on the document? If not, please suggest a different phase.
- Does the Data Sources Section seem complete? If not, please provide additional data sources that should be included.
- Does the Data Elements Section seem complete? If not, please provide additional data elements that should be included.

Table of Contents

1. Acknowledgements 3
2. General Information 3
   Background 3
   Revisions 5
   Purpose 5
   Guiding Principles 6
   General Objectives 6
3. Priority Use Cases 7
4. Business Requirements 10
5. Functional Requirements 18
6. Data Sources 23
7. Data Elements 25
8. Glossary 31
9. References 34

1. Acknowledgements

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2. General Information

Background

As health technology ecosystems develop, access to the right person's health data at the right place and at the right time by the appropriate provider is imperative for quality care delivery and care coordination. More complex needs for accurate provider and person data is essential for advanced payment models and delivery system reform improving health, quality of care, and reducing costs. To improve quality and accuracy of provider and client data, a unified master data management (MDM) approach must be planned to identify and coordinate data requiring strategy, policy, workflow transformation, in addition to technology solutions, data quality and data availability. An MDM strategy supports a unified view of provider and client data across the data sharing networks and can be achieved by coordinating architecture and services improving quality of data and collaboration across providers and organizations.

On January 15, 2016, Colorado's Department of Health Care Policy and Financing (HCPF) submitted an Implementation Advanced Planning Document (IAPD) update to request Health Information Technology for Economic and Clinical Health (HITECH) Act Health Information Exchange (HIE) administrative funding from the Centers for Medicare & Medicaid Services (CMS). This funding covers provider onboarding, and the strategic development and implementation of core infrastructure and technical solutions to create and enhance sustainable solutions for Medicaid providers serving Medicaid clients and supporting Medicaid eligible professionals' (EPs') and eligible hospitals' (EHs') achievement of Meaningful Use (MU). The IAPD aligns to HCPF's strategy for advancing Health Information Technology (Health IT) and HIE in Colorado by supporting the design, development, testing, and implementation of core infrastructure and technical solutions promoting HIE for EPs and EHs aligned with Colorado's

Medicaid Electronic Health Record (EHR) Incentive Program authorized by the American Recovery and Reinvestment Act of 2009 (ARRA).

HCPF seeks to improve processes, policies, and tools to link and synchronize Medicaid member, provider, and organization data across HIE data sources. A unified view of Medicaid provider and member data across the Medicaid and HIE Network is necessary to improve the precision and quality of data necessary to enhance care coordination and data quality for eCQM reporting for Medicaid members.

By implementing both a Master Patient Index (MPI) and Master Provider Directory (MPD) as the foundation for its MDM, HCPF will achieve a unified view of Medicaid provider and member data across the HIE networks, improving the quality of data, collaboration, and reducing costs, and will also create a suite of data records and services that will allow HCPF to link and synchronize Medicaid member, provider, and organization data to HIE sources. This effort will result in a single, trusted, authoritative data source. The fully implemented MDM will include a Consents and Disclosures repository as part of Medicaid provider directory that will support granular level consents and disclosures for information sharing across medical, behavioral, and substance use information. Creating a strong and legally sound consent framework will reduce barriers to information exchange improve interoperability and enhance care coordination.

The MDM will encompass the state's HIT foundation to achieve a unified view of Medicaid provider and member data across the Medicaid and HIE Networks and will expand to other data uses in future phases. This will help to achieve HCPF's vision of enhancing care coordination and HIE Network usage by improving the quality and completeness of data, collaboration, and reducing associated costs. The MDM solution, as a shared service, will support HCPF and both HIE providers, targeting HCPF/Medicaid-centric data, including eCQMs. This will allow HCPF to precisely correlate and synchronize member, provider, and organization data with HIE data sources. As this solution becomes available, HCPF will plan for and request federal and state funding necessary to enable the MMIS to effectively utilize this service.

The need for accurate and timely attribution of providers is particularly important for those who practice in multiple organizations. This will also be important as the definition for a practice evolves as does the transition to increasingly team-based care.

To ensure effective coordination and alignment of strategic efforts, HCPF worked with the Office of eHealth Innovation (OeHI) to research and define an MDM strategy. OeHI is Colorado's state designated entity responsible for coordinating strategic health IT initiatives and establishing data sharing and health IT governance, with advisory support from the Governor-appointed, public/private eHealth Commission. To date, Colorado does not have a MDM strategy for the sharing and exchanging health information, nor does it have a state-wide identity management or provider directory system that health care providers can access. Key stakeholders involved in the State Innovation Model (SIM) Grant articulated the need for a master patient/person index (MPI) and master provider directory (MPD) during interviews conducted in June 2016. Additionally, MPI/MPD were selected as the top use case to advance SIM practices in their goals to integrate behavioral and physical health while advancing toward value-based payment.

In the fall of 2016, OeHI solicited and received public comment on the MDM Draft Business and Functional Requirements. Over 360 comments were received and reviewed. To address another component of the project, the OeHI and HCPF are releasing the proposed criteria for the qualifications required to bid on the MPI/MPD service solutions. At this time, there is no official date to release a Request for Proposal (RFP) for MPI/MPD services and prior to any formal RFP there will be an additional opportunity to submit public comments on the draft RFP.

Revisions

Initial use cases have been prioritized and moved to the front of this document to help bring clarity for what is needed in the early stages of implementation. The governance entities will progressively develop and prioritize other use cases. The business and functional requirements have been reordered to separate those requirements that are needed for only MPI from those needed only for MPD, and those that are needed for both services are recorded in a third table. Finally, those business and functional requirements that do not directly require the use of an MPI or MPD are listed in a fourth table. Because these sections have been reordered from the first draft of this document, it was necessary to re-sequence the identifiers (IDs) in each section.

Purpose

The purpose of this document is to outline the specific Colorado business needs and use case objectives that will benefit from an integrated master data management platform which includes an MPI and MPD, and to identify the functional requirements that must be included in the MDM for these objectives to be achieved. The business needs and use cases were gathered from existing state documents and vetted through interviews and focus groups conducted in August 2016. They were then layered into three distinct program phases that will be used to define the implementation and rollout schedule. Base requirements in later stages may optionally be implemented in an earlier stage, as some requirements in phases two and three may need to be implemented earlier depending on the timing of the SIM and APD rollouts.

- **Year One Base Requirements** – Support Medicaid business needs and use cases by aligning Medicaid data sources for MPI/MPD. Also, support SIM needs for clinical care, HIE use cases, and eCQM solution use case. Optionally, year 2 base requirements needed for SIM (dependent on SIM direction and solution requirements), APD or other services could be implemented in this this phase.
- **Year Two Base Requirements** – Begin DORA and CDPHE data source integration, and integrate SIM/MPI/MPD solutions with the Medicaid MPI/MPD efforts. Optionally, year three base requirements needed for APD or other services could be implemented in this phase.
- **Year Three Base Requirements** – Expand to include other public/private partner and social determinants use cases.

Guiding Principles

The following assumptions are the foundation and principles for which the business and functional requirements were developed:

- The initial phases of MDM include only an MPI and MPD.
- The State will not build its own MDM infrastructure but will support the procurement and implementation of these tools through contract(s).
- The State will not "rip and replace" MDM infrastructure where it already exists.
- Start with small, but important initiatives, then expand to larger-scale use cases. MDM will be initially implemented around SIM and the Medicaid population, then expanded to improve the health of all citizens of Colorado.
- Current health information exchange initiatives and private sector technology initiatives will continue to maintain their own local MPIs where applicable.
- All systems will use national standards where available.
- All systems will support State and Federal requirements for the protection of personally identifiable information (PII), protected health information (PHI), and super-protected information, including but not limited to data covered by 42 CFR Part 2.
- The use of structured data will be encouraged where feasible, but unstructured data will be supported as needed.
- MPI and MPD will store master-level information and will not generally be used to store detailed transactions, claims, or clinical messages.

In addition to these principles, there is a need for a governance framework to oversee the implementation and ongoing operations for these MPI and MPD services. This framework may be comprised of one or more committees and workgroups, and will help to confirm priorities, implementation timelines, and data usage, as well as the identification of business models and program sustainability.

General Objectives

This document will be used to identify Colorado's needs and requirements for both an MPI and MPD, and used to evaluate vendors and ensure alignment among its external partners. The following general objectives were noted as goals in the 2012 Comprehensive State Health Information Management Strategy (C-SHIMS) document[1] and are referenced with each of the business needs defined below.

[1] Comprehensive State Health Information Management Strategy (CSHIMS), Colorado Department of Health Care Policy and Financing & Governor's Office of Information Technology, August 2012

ID	General Objectives:
G1	Improve information availability and interoperability within the State
G2	Reduce costs and redundancy
G3	Increase information agility
G4	Increase information security

3. Priority Use Cases

Colorado's Office of eHealth Innovation (OeHI) provides governance and strategic oversight for Health IT initiatives, with advisory support provided by the public/private, Governor-appointed eHealth Commission, and fiscal support from the state's Medicaid agency; the Colorado Department of Health Care Policy and Financing (the Department). With 90% federal funding approved by the Centers for Medicare and Medicaid Services (CMS) through an Implementation Advanced Planning Document (IAPD), the Department has been preparing to issue a Request for Proposals (RFP) for the implementation of a Master Patient Index (MPI) and a Master Provider Directory (MPD). These services will first be used to serve the needs of Colorado's Medicaid clients, providers who serve the Medicaid program, and health care practices and clinicians taking part in Colorado's State Innovation Model (SIM) transformation initiatives. Over time, the technical assets of the MPI and the MPD are expected to be extended from State agency use to serve identity information management needs across Colorado's health care ecosystem.

Significant input has been collected on the priorities for implementing use cases and business requirements for the first phase of Colorado's MPI and MPD services. The first phase will support Colorado's Medicaid and SIM programs, and then support other health improvement initiatives in Colorado. The use cases described below are considered by stakeholders interviewed for this document to be the highest priorities for the first phase of implementation, and are not intended to represent all potential use cases for the MPI and MPD services, or the prioritization of use cases for subsequent phases of development of the MPI and the MPD.

More work is needed to determine exact timing for these activities. However, as both the MPI and MPD play a key role in the Medicaid and SIM programs, it is possible that the initial set up for both services could occur simultaneously in year one by connecting first with the applicable State systems. Other systems could connect as determined by existing commitments and additional discussion by governance workgroups.

Table 1. Priority Use Cases for MPI

Master Patient Index (MPI)	
Priority Use Case	Use Case Value Propositions
Improved patient identity management (i.e. matching and de-duplication of individuals' records)	• Improve patient safety • Improve care coordination • Improve quality of care • Reduce costs within the delivery system, to state agencies, and across programs • Reduce patient identity errors • Increase administrative and clinical efficiencies • Support patient-level interoperability • Support quality of care measurement and improvement • Help identify where/how/why the patient is being treated • Support linkage of patient information to non-health settings and their associated data systems
Improved linking between Business Intelligence & Data Management System (BIDM) and data sources	• Improve patient matching with Medicaid to internal (other state agency) and external (private sector) systems • Increase data availability for client services
Ensure accuracy of expiration status for persons who have died	• Improve Medicaid data quality and program integrity

Table 2. Priority Use Cases for MPD

Master Provider Directory (MPD)	
Priority Use Case	Use Case Value Propositions
Support Department staff in accessing current/accurate provider information for various program needs	• Improve access to reliable provider information • Improve outreach/communication to current and potential Medicaid providers

Support a single place for providers to keep their information up-to-date	• Improve efficiencies for providers (reduce provider burden in submitting data to multiple provider directories) • Provide a central source of truth for provider information • Augment the process of information exchange with DORA
Support linkage between providers and their networks	• Improve access to provider network information • Support analytics for determining network adequacy and creating strategies for addressing workforce gaps
Support linkage between providers and their locations	• Improve public health and emergency preparedness databases • Assist in fraud detection
Link health provider licensing and certification information to provider data in the Medicare Management Information System (MMIS)	• Reduce fraud, waste, and abuse • Improve Medicaid program administration

Table 3. Priority Use Cases for Integrated MPI and MPD services

Integrated MPI and MPD	
Priority Use Case	Use Case Value Propositions
Identify active care relationships between patients and providers	• Improve care coordination for patients • Support patient notifications to providers • Support quality measurement, alternative payment models, and quality improvement activities
Provide actionable health information to Medicaid providers, benefits management services, and program administrators	• Reduce administrative burden and improve effectiveness • Improve the linkage with mental health and substance use treatment information with Medicaid systems

4. Business Requirements

The following business needs were identified throughout the C-SHIMS document and/or identified through interviews with various stakeholders. Those immediate needs identified for Medicaid operations have been placed into phase one. Phase two represents those needs that will be addressed by connecting DORA and CDPHE with the Phase one Medicaid infrastructure. And, Phase 3 represents those needs that will be addressed when the broader stakeholder community is connected. These business requirements provide more-specific details about the business needs represented by the high level use cases identified above.

The following business requirements listed by phase represent those needs satisfied in part through the use of a master patient index (MPI).

ID	Business Requirement	Customers	Phase	Objectives	MPI/MPD
B01	Provide core patient-matching functionality for shared community HIE platform to support care coordination, care delivery, human services interoperability, provider data integrity across platform and/or services.	All	2	G1, G2, G3	MPI
B02	Reduce patient-matching errors by identifying duplicate patient records for manual review and correction.	All	1	G1, G2	MPI
B03	Ability to maintain expiration status of persons that have died including facility location, date, time, plus use of a death registry.	All	1	G1, G2	MPI
B04	Improved availability of data considered to be sensitive at the person-level, but that could be made available in aggregate for analysis and reporting (CSHIMS, 2012).	All	1	G1, G3, G4	MPI
B05	Improve patient matching rates.	Private health partners (providers, commercial payers, others), HIEs, HCPF, CDPHE, RCCOs,	2	G1, G2, G3	MPI

		CMHCs, PCPs, CO APCD			
B06	Coordinate with K-12 identity management efforts, where childhood identity via K-12 efforts is coordinated, and does not conflict, with MPI efforts across the State.	TBD	3	G1, G2, G3	MPI

The following Business requirements listed by phase represent those needs satisfied in part through the use of a master provider directory (MPD).

ID	Business Requirement	Customers	Phase	Objectives	MPI/MPD
B07	Standardize the process and information collected through facility licensing programs to be utilized for program administration and evaluation.	All	1	G1, G2	MPD
B08	Identify, segment and maintain demographic information about individual providers and organizations beginning with those registered in Colorado's MMIS, then expanded to include all Coloradans.	Medicaid	1	G1, G2	MPD
B09	Must support analytics for determining adequacy of the provider network.	Medicaid, RCCOs	1	G1	MPD
B10	Link health provider credentialing, licensing and certification information to provider data in MMIS to improve program administration and reduce fraud, waste and abuse.	RCCOs	1	G1, G2	MPD
B11	Provide information contained in HIE/HIT Provider Directories to relevant state agencies for authorized uses, potentially including entity-level and individual-level provider information on active service locations, organizational affiliations, admitting privileges	State agencies with health data/systems	2	G1, G2	MPD

	with hospitals, accurate and up-to-date contact information, and national provider identifiers, among others (CSHIMS, 2012).				
B12	Allow provider directory access by authorized organizations and individuals including non-health providers via a standard web-services model.	Medicaid	2	G1, G3, G4	MPD
B13	MPD infrastructure to support timely updates to health professional licensure information and information exchange with DORA.	RCCOs	2	G1, G2	MPD
B14	Identify and differentiate billing provider from servicing provider.	Public and commercial payers, CO APCD	2	G1, G2, G3	MPD
B15	Provide a one stop source of comprehensive provider information, which other sources can use to validate their provider information (CSHIMS, 2012).	Providers, CDPHE	2	G2, G3	MPD
B16	Leverage provider location information to identify workforce shortage areas.	RCCOs	2	G2, G3	MPD
B17	Support case workers with accurate provider information and the ability to participate in health information exchange (access to Direct addresses).	RCCOs, Medicaid	3	G1, G2, G3	MPD

The following Business requirements listed by phase represent those needs satisfied in part through the integrated use of a master patient index (MPI) and a master provider directory (MPD).

ID	Business Requirement	Customers	Phase	Objectives	MPI/MPD
B18	Maintain source of data.	Private health partners (providers, commercial payers, others), HIEs, APCD,	1	G1, G4	Both

		HCPF, DHS, CDPHE, Other agencies deemed in scope, and All health data system /sources/users			
B19	Provide a consistent view of information over time as it pertains to each specific data feed's availability.	Private health partners (providers, commercial payers, others), HIEs, HCPF, DHS, CDPHE, CO APCD, and other data sources	1	G1, G2, G3	Both
B20	Common key to link a patient to external data sources.	Private health partners (providers, e.g., hospitals, primary care, CMHCs, private practice, FQHCs, Pharmacy, LTPAC/SNF, commercial payers, others), HIEs, APCD, HCPF, DHS, CDPHE, OIT, Other agencies deemed in scope	1	G1, G2, G3, G4	Both
B21	Provider attribution should support the ability to link providers to all the organizations they bill under.	RCCOs	1	G1, G2	Both
B22	Provider attribution should support the ability to link providers to all the locations where they practice.	Medicaid, RCCOs	1	G1, G2	Both
B23	Linkages from the MPI to the Master Provider Directory for attribution of patients/clients to	Begin with Medicaid, expand to all Coloradans	1	G1, G2	Both

	providers and organizations where care has been delivered.				
B24	Provide infrastructure to support a single payment to a single provider, for a single patient.	All	1	G1, G2, G3	Both
B25	Reduce data entry and information duplication across program administrative transactions.	All	2	G1, G2	Both
B26	Linked administrative data should be automatically shared across state and community-based health care programs, improving workflows and reducing data-entry errors within state programs and across the health care community.	All	2	G1, G2	Both
B27	Support meaningful use linkage between providers and CDPHE immunization registry.	All	2	G1, G2, G3	Both
B28	Future state should make it easier to publicly share accurate information for use by citizens, businesses, policymakers, and researchers following required access rules.	All	3	G1, G3	Both
B29	Support medical center and statewide clinical research efforts where person and provider identification and matching are critical (CSHIMS, 2012).	All	3	G1, G2, G3	Both
B30	Support home health and community health workers in ability to participate in health information exchange (including access to Direct addresses).	Home health, community health workers	3	G1, G2, G3	Both

The following Business requirements listed by phase represent those needs that can be achieved with the support of MPI and MPD services as part of their overall infrastructure.

ID	Business Requirement	Customers	Phase	Objectives	MPI/MPD
B31	Reduce capture of data when it already exists and is available elsewhere (CSHIMS, 2012), including HIEs, state agencies and other data sources.	All	1	G1, G2, G3	Base
B32	Provide information in a consistent and standard format to reduce data analysis effort (CSHIMS, 2012).	All	1	G1, G2, G3	Base
B33	Information should be auditable to ensure reliability and integrity of data for purposes including but not limited to meaningful use, credentialing, etc.	All	1	G4	Base
B34	Support a strategy of transparency for accurate cost, performance, and quality measurement of providers and organizations across State and Federal programs by storing the linkage of patients with the providers involved in their care.	Care delivery providers, other program participants required performance measure reporting	1	G1, G2, G3	Base
B35	Data capture should be efficient and effective using standardized data elements and collection processes that are simplified or automated.	All	1	G1, G2, G3	Base
B36	Support for national security standards.	All	1	G1, G4	Base
B37	Credibility/integrity of data elements (including source and age of data).	All	1	G1, G2	Base
B38	MPD infrastructure to link provider licensure information to Medicaid program administration.	RCCOs	1	G1, G2, G3	Base

B39	MPI/MPD infrastructure to support to delivery of actionable health information to Medicaid providers, enrollment services, and program administrators, plus reduce administrative burdens and improve effectiveness linking CDPHE registries to MMIS.	RCCOs	1	G1, G2, G3	Base
B40	Use industry standards for data exchange to accelerate and sustain state-wide Health Information Exchange services to assist Colorado providers in meeting meaningful use and provide timely access to clinical data that can be used to improve care coordination, and aggregated for data analytics and reporting.	RCCOs	1	G1, G2, G3	Base
B41	Provide real-time administrative reporting using role-based access.	State/Federal programs, commercial payers, CDPHE, other data senders/users, Providers – sending	1	G1, G3	Base
B42	Support reference between claims info and clinical, and tie-in with social (non-health) organizations.	Commercial payers, providers, HIEs, APCD, HCPF, DHS, CDPHE	2	G1, G2, G3	Base

B43	Provide a reference architecture of information made available to state agencies, including governance and standards around available information (CSHIMS, 2012).	State agencies with health data systems/data (DORA, HCPF, CDPHE, DHS, OIT, DOC) and other peripheral social and community settings (e.g., homeless support programs, justice)	2	G1, G2	Base
B44	Support linkage between providers and CDPHE communicable disease registries / syndromic surveillance system.	All providers	2	G1, G2, G3	Base
B45	Support for data quality tools to help manage data integrity and quality from source systems.	All	2	G1, G2, G3	Base
B46	Support quicker and more accurate processing of administrative transactions by guaranteeing reliable data.	All	2	G1, G2, G3	Base
B47	Make relevant health information available for performance analysis (CSHIMS, 2012).	Providers and care teams	3	G1, G2, G3	Base
B48	Ability to capture clinical data included in Medicaid claims and claims attachments to be included in longitudinal health records.	HCPF, HIE, RCCO, Medicaid providers	3	G1, G2, G3	Base
B49	MPI/MPD infrastructure support for participating health care providers to query longitudinal health records.	All providers	3	G1, G2, G3	Base

B50	There should be a high level of building interoperability, and maintaining and improving MPI and MPD integration between health systems, databases, and programs, enabling standardized data exchange for individuals moving between and across health services and programs.	All	3	G1, G2, G3	Base
B51	System should support the ability for state and community health services to be administered efficiently and effectively.	DHS, community services, providers, public/private payers, patients, CO APCD	3	G1, G2	Base
B52	Provide unambiguous electronic addresses of message/ transaction senders and receivers for health information exchange, using national standards.	Medicaid, HIEs, providers, commercial payers, DHS	3	G1, G2, G3	Base
B53	Define comparisons with other communities, the state and nation (CSHIMS, 2012).	CDPHE (state and local), HCPF (Medicaid), policy, research stakeholders, CO APCD	3	G2	Base

5. Functional Requirements

These functional requirements were based on the business needs and uses cases defined above for both MPI and MPDs. There are no phases defined for these requirements as the selected systems are expected to perform these functions when installed.

The following functional requirements are needed to support a master patient index.

ID	Functional Requirements	MPI/MPD
F01	Provision of a master identifier and ability to cross reference to other designated identifiers maintained by State agencies and others (e.g., Medicaid ID numbers, provider identifiers) with the minimum set of data used to uniquely identify a specific person (CSHIMS, 2012).	MPI
F02	Deployment of a highly accurate, configurable matching engine to ensure matching accuracy, prevent the occurrence of false positives (e.g., where two records are reported as a match but they are, in fact, two different individuals), identify and record occurrence of duplicates, and support modification of match fields by data source (CSHIMS, 2012).	MPI

F03	Share and integrate MPI demographic data with registration/admission systems.	MPI
F04	Ability to add new patients using existing registration, admission or scheduling process.	MPI
F05	Ability to notify all systems when new patients are added or when demographics are updated by another system.	MPI
F06	Support MPI integration across the continuum of care: acute care, ambulatory, physician office, SNF, home health, and ancillary services.	MPI
F07	Support an enterprise number as well as separate, multiple medical record numbers, including host systems with a patient identifier hierarchy consisting of multiple patient identifiers internal to that system.	MPI
F08	Alert the user of a potential duplicate during registration process without producing multiple alerts for the same registration.	MPI
F09	Prevent the manual assignment of MPI numbers; the MPI system should manage assignment of the enterprise identifier.	MPI
F10	Store individual encounter information at the MPI level with the last encounter visit/date of service.	MPI
F11	Provide embedded weighted algorithm to assist with the identification of potential duplicate Medical Record Numbers (MRNs) during registration process as well as during duplicate review process.	MPI
F12	Provide merge capability for two or more records for same person (e.g., duplicates, erroneous registration). • Note: some host systems have a single field for patient name, while other systems have multiple fields for patient name (first, last, MI) • Correct guarantor information must remain intact during a merge • Manual merge capability required; automatic merge is optional functionality with configuration to enable or disable	MPI
F13	Support for sending/receiving HL7 merge transactions (e.g., A18, A30, A34).	MPI
F14	Provide capability to un-merge records incorrectly merged, and correct guarantor information must remain intact during un-merge.	MPI
F15	Provide linking capability for 2 or more records for same person in different host systems.	MPI
F16	Provide capability to un-link records that were incorrectly linked.	MPI
F17	Provide patient overlay detection and remediation: • Overlay occurs when information on two different people is combined or added to the same patient record. • When overlay is detected, need a quarantine function that will prevent merging or linking until information is reviewed.	MPI
F18	Prevent registration / enrollment of a deceased patient. Flag deceased patients and integrate information with registration and clinical modules.	MPI
F19	Support flexible search criteria during the patient identification process: MPI for example, partial name, Soundex, medical record number, encounter number, age, date of birth, sex, combinations of data.	MPI
F20	Support alternative name/alias processing.	MPI
F21	The system should provide customizable workflow queues for assignment of tasks (e.g., provide a work queue to review potential duplicates).	MPI
F22	Provide on-line inquiry and retrieval capabilities to the MPI history for an unlimited number of years.	MPI

F23	Generate a report indicating patients with multiple medical record numbers.	MPI
F24	Ability to write ad-hoc reports on all MPI data fields with a standard report writer application.	MPI
F25	Maintenance of user audit detail and ability to report on MPI activity.	MPI
F26	The system should provide reports that identify duplicates generated by user, area and facility.	MPI
F27	Support for probabilistic, deterministic and rules-based matching algorithms, including the ability to match and compare on historical values.	MPI
F28	Provide capabilities to improve the integrity and reliability of the patient data elements.	MPI
F29	The MPI should be capable of transmitting an “error” message back to the source of data for records identified as duplicates.	MPI
F30	Provide a web based user interface for administrators to view versions of mastered data (Patient, Provider, Organization, Location, Facility) over time. The viewer should show the master record and the instance records and values from each data source that were used create the master record for each version.	MPI
F31	The system should support a manual review process in identifying and matching false positives based on set data matching standards.	MPI
F32	The system should support the integration with an external data source (i.e., credit bureau reporting database) to improve patient matching.	MPI
F33	Support the use of "reference data sets", historical information (i.e. credit bureau information) or other “advanced matching techniques.” to improve patient matching, data quality, integrity, and reliability.	MPI

The following functional requirements are needed to support services associated with a master provider directory.

ID	Functional Requirements	MPI/MPD
F34	MPD must support one to many linkages (who/where/what).	MPD
F35	Identifying algorithms based on national guidelines should have a high-degree of statistical confidence.	MPD
F36	Rules-based engine to implement policies for: • Authorization: Right to access the provider directory • Authentication: Identity proofing of individuals and/or organizations • Access: When and how provider directory information may be accessed by individuals • Audit: Record and examine when information is accessed and by whom	MPD
F37	Support both an Entity Level Provider Directory (ELPD) and an Individual Level Provider Directory (ILPD).	MPD
F38	The Provider Directory uses a standard provider identity, performs information correlation process used to uniquely identify an individual and match provider data from various connected healthcare entities and care settings.	MPD
F39	The Provider Directory has a process for synchronizing to a statewide DOH/HHS provider directory.	MPD
F40	The application has a process for resolving unmatched and/or overmatched providers.	MPD
F41	The application has a process for consuming additional provider data from connected entities.	MPD
F42	The application has a process disassociating records from each other received from multiple connected entities that were inadvertently matched.	MPD
F43	The application has a process for merging providers from a single connected entity.	MPD
F44	The application has a process for splitting providers from a single connected entity.	MPD
F45	The application has a process for reporting on records that require attention such as potential matches and or inconsumable records.	MPD
F46	The application has a process for updating provider data.	MPD
F47	The application has a process for incorporating new data sources	MPD
F48	The application has a process for consuming, managing and distributing information on which services and associated formats a connected system uses.	MPD
F49	The application has a process for managing users.	MPD
F50	Provide a web based user interface for users to view versions of mastered data (Provider, Organization, Location, Facility) over time. The viewer should show the master record and the instance records and values from each data source that were used create the master record for each version.	MPD
F51	Make compressed and expanded views for a single provider in the directory, rather than a long series of single records (expandable view).	MPD
F52	Support for geo-mapping identifiers for provider locations.	MPD

The following functional requirements are needed to support services associated with both a master patient index and a master provider directory.

ID	Functional Requirements	MPI/MPD
F53	Data must be searchable, query-able, and integrate-able with other data sources (CSHIMS, 2012).	Both
F54	Must support ability to accept data from disparate data sources.	Both
F55	Provision of an enterprise bus or other service that allows for a “publish / subscribe” technical implementation with a secure transmission of data (CSHIMS, 2012).	Both
F56	Digital certificate / public key discoverability meeting national accreditation/testing standards (DirectTrust, eHealth Exchange) and national security standards (NIST Level 2 or 3).	Both
F57	System should have the capability to push updated information back to source systems as requested.	Both
F58	System should be agile, so data elements can be added to the MDM for new data collection and tracking over time as well as integration with new systems.	Both

The following functional requirements represent those needs that can be achieved with the support of MPI and MPD services as part of their overall infrastructure.

ID	Functional Requirements	MPI/MPD
F59	System must be secure, scalable, reliable and sustainable (CSHIMS, 2012).	Base
F60	Ability to interface with existing and future systems, including mainframe systems that require a web services interface (SOAP, REST) (CSHIMS, 2012).	Base
F61	Capability to audit activity across entire system (CSHIMS, 2012).	Base
F62	IHE Profile web services-based exchange with Application Programming Interface.	Base
F63	Support custom fields.	Base
F64	Ability for end users to customize or manipulate the product screens and placement of returned data to accommodate individual user preference.	Base
F65	Ability to assist end-user in preventing fraudulent use of identity.	Base
F66	The system should provide tools for setting up automatic distribution of reports.	Base
F67	The system should provide a high-level dashboard for managerial review.	Base
F68	Provide multiple level reporting (i.e., internal, external, agency, division and facility level reporting).	Base
F69	The system should have role based security with the ability to separate administrative tasks from workflow tasks, and to limit user access by entity, as desired.	Base
F70	The system should allow users security to be configured for different levels of access depending on the entity.	Base
F71	System administrators should have the ability to control viewing and printing of reports, and limiting access to these functions.	Base

F72	Include the ability to audit the data back to the source record, along with the ability to track who made changes, time of the change etc.	Base
F73	Provide the State with MDM data quality reporting to assess and prioritize data quality improvements with source systems.	Base
F74	Provide support for a data retention schedule.	Base
F75	Provide support for mobile devices	Base

6. Data Sources

"Data is seamlessly shared and exchanged across multiple agencies, as well as community, state, and federal levels, in a manner that protects the privacy and security of individually identifiable information and supports sustained access to timely, complete, and actionable health information" (CSHIMS, 2012).

OeHI will coordinate with the eHealth Commission, Colorado Governing Data Advisory Board (GDAB), state agencies, and non-governmental partners to review and prioritize data sources for data sharing agreements. State agencies including MMIS will be the initial data source for populating the MPI, while DORA and CDPHE data will be used to initially populate the MPD.

The following are a list of suggested data sources that could be used to generate input to the master data management system through a system of governance and trust based on agreements and shared consent. Data owners will need to agree to use and terms of data sharing for the data to be used in the MPI and/or MPD.

Proposed Data Sources
Providers (via EHR, HIE, web-portal)
Labs/hospitals (via EHR, HIE, web-portal)
Medical licensing database (Department of Regulatory Agencies—DORA) (CSHIMS, 2012)
Credentialing databases, both local and national (e.g. CAQH)
Multi-payer provider databases
National Plan and Provider Enumeration System (NPPES)
Medicare Provider Enrollment, Chain, and Ownership (PECOS) System
Medicaid Management Information System (MMIS)(CSHIMS, 2012)
State-wide Data and Analytics Contractor (SDAC)(CSHIMS, 2012)
Colorado Benefits Management System (CBMS)
All Payer Claims Database (APCD) – CIVHC
AMA provider files
Connect for Health Colorado
Death registry information from Social Security Administration and/or Electronic Death Registry System (EDRS)

Proposed Data Sources

CDPHE Registries (CSHIMS, 2012):
Registries may include:
• Colorado Vital Information System (COVIS)
• Colorado Immunization Information System (CIIS) – consolidated immunization information
• Colorado Electronic Disease Reporting System (CEDRS) – communicable disease reporting
• Cancer Registry – treatment summary and care plan for cancer survivors; cancer case tracking and trending
• Newborn Evaluation Screening & Tracking (NEST) – newborn hearing and lab results
• Clinical Health Information Records of Patients (CHIRP) – maintains health records for children with special needs
• Colorado Response to Children with Special Needs – birth defect data
• Tracking registries providing data on specific communicable diseases:
  ○ eHARS (HIV and AIDS);
  ○ TBdb (tuberculosis);
  ○ Viral Hepatitis;
  ○ Prenatal Hepatitis and Hepatitis-B in pregnant women;
  ○ Elevated Lead
• Patient Reporting Investigating Surveillance Manager (PRISM) – surveillance and case management of STIs, HIV and viral hepatitis
• ARIES – tracking data on alcohol and drug abuse within HIV populations
• Laboratory Information Management System (LIMS) Plus – maintains chemistry, microbiology, and toxicology lab reports
• Refugee Case Management Data – from refugee health clinics
• Outbreak Management – disease outbreak data
• Electronic Death Registry System (EDRS)

Department of Human Services (DHS)(CSHIMS, 2012): • Behavioral health service provider licensing and certification information, including Community Mental Health Centers and substance use treatment providers • Avatar – client mental health records, pharmacy and laboratory records • Colorado Client Assessment Record (CCAR) – client assessment data • Computerized Homeless Information Referral Program (CHIRP) – client medical records • Colorado State Mental Health Institutes – client medical records • Colorado TRAILS – including child welfare (adoption, foster care, child protection) and youth corrections information, also maintains children's medical records • Drug/Alcohol Coordinated system (DACODS)- substance use assessment • An encounter database includes services provided to Medicaid clients through Behavioral Health Organizations • Refugee Management Information System – client medical records • Veterans' Nursing Homes – client medical records and Medicaid claims
Department of Corrections (DOC)(CSHIMS, 2012): • Encounter System – housed within the database of all offender records, contains health records including mental, physical, dental and medication information and manages offenders from incarceration through their transition to and completion of, community-based supervision by the Adult Parole Division • DOC E-prescribing – offender prescription records and filling system

Proposed Data Sources
Non-State HIT/HIE Partner Entities: • Colorado Regional Health Information Organization (CORHIO) – provides HIE and transition support services (TSS), maintains connection to health care provider EHRs and other information systems, provides for access to aggregated clinical information, and facilitates connections to other regional health information organizations • Colorado Health Benefits Exchange (COHBE) – developing and operating state health insurance exchange, including eligibility processing for commercial health plans and Medicaid / CHP+, and maintains health plan administrative and provider network data • Quality Health Networks (QHN) – provides HIE services and promotes innovative uses of electronic health information for improved healthcare outcomes • Center for Improving Value in Health Care (CIVHC) – developing and operating Colorado All-Payer Claims Database (APCD), which includes Medicaid claims information, and provides aggregation of claims across Colorado health plans for research and analytics purposes • Colorado Community Managed Care Network (CCMCN) – provides HIE services that enable its members and their community partners to succeed as efficient, effective and accountable systems of care • Regional Care Coordination Organizations (RCCOs), Managed Care Organizations (MCOs), Behavioral Health Organizations (BHOs), and other payment / service delivery providers – contracted by State agencies to provide health care services to clients of public programs or on behalf of public programs

7. Data Elements

Data Element(s)	MPD/ MPI
MPI Person Identifiers (separate records for each data source):	
• Medical Record Number / Facility Identifier	MPI
• Facility Mnemonic	MPI
• Account Number	MPI
• Full Name* (First, Last, Middle)	MPI
• Title	MPI
• Suffix	MPI
• Maiden Name / Alias / Prior Name	MPI
• Birthdate / Date of Birth*	MPI
• Gender / Birth Sex*	MPI
• Date of Death	MPI
• Social Security Number* (9-digit)	MPI
• Full Address: ○ Address 1 (Street) ○ Address 2 (Apt / Suite) ○ City ○ State ○ Zip Code ○ Country ○ Country Code	MPI

Data Element(s)	MPD/ MPI
○ Province	
• Race / Other Race	MPI
• Hispanic Indicator	MPI
• Ethnicity 1 / 2 / Other	MPI
• Family Association [discuss linkage to siblings and parents]	MPI
• Telephone ○ Home ○ Cell/Mobile ○ Other	MPI
• Email Address ○ Primary ○ Other	MPI
• Preferred contact method indicator (phone, email, etc.)	MPI
Insurance(s):	MPI
• Payer Code	MPI
• Payer Name	MPI
• Member / Subscriber Code	MPI
• Policy Number	MPI
• Group Name	MPI
• Group Number	MPI
• Insurance Address	MPI
• Insurance Phone	MPI
• Effective Date	MPI
• End Date	MPI
• "Multiple" or "Dual Eligible" indicator	MPI
Primary Care Physician	MPI
Active Care Team Member(s)	MPI
Last Update Date	MPI

* Denotes required data elements needed for accurate patient matching

Provider Directory Person Information:	
• Provider Name (First/Middle/Last)*	MPD
• Provider Legal Name (First/Middle/Last)	MPD
• Other Name (First/Middle/Last)	MPD
• Initial (First/Middle)	MPD
• Other Initial (First/Middle)	MPD
• prefix / suffix	MPD
• Birthdate / Date of Birth	MPD
• Birth Country	MPD
• Gender / Birth Sex	MPD
• Date of Death	MPD
• Phone / Extension	MPD
• Type of Professional (e.g., M.D., P.A., etc.)	MPD
• Fax	MPD

Data Element(s)	MPD/ MPI
• Social Security Number (9-digit) / SSN-4	MPD
• DIRECT address(es)	MPD
• State/Federal ID	MPD
Medical License:	MPD
• License Number	MPD
• License State	MPD
• License Type	MPD
• Granted/Issue/Effective Date	MPD
• Expiration Date	MPD
• License Status Code[2]	MPD
• License Mod (CDPHE CDC)	MPD
• Individual NPI:	MPD
• Individual NPI number (NPI)	MPD
• Enumeration Date	MPD
• NPI Deactivation Reason Code	MPD
• NPI Deactivation Date	MPD
• NPI Reactivation Date	MPD
• Unique Physician Identification Number (UPIN)(CSHIMS, 2012)	MPD
• DORA License Key (CDPHE CDC)	MPD
• Tax ID (TIN) (CDPHE CDC)	MPD
• Tax ID Previous	MPD
• Drug Enforcement Administration Number	MPD
• DEA Effective Date	MPD
• DEA Expiration Date	MPD
• Controlled Substance Registration Number	MPD
• Medicare Number	MPD
• Medicaid Number	MPD
• Previous Medicare Number	MPD
• Previous Medicaid Number	MPD
• Immigrant Visa Number	MPD
• Treo Peer Group ID	MPD
• Object Identifier (OID) – http://hl7.org/fhir/sid/oid	MPD
Education (CDPHE CDC):	MPD
• Educational Commission for Foreign Medical Graduates (ECFMG) Number	MPD
• Education Date (CDPHE CDC)	MPD
• Degree School	MPD
• Degree Level (CDPHE CDC)	MPD
• Degree Type (CDPHE CDC)	MPD
• Resident (CDPHE CDC)	MPD
• Fellow (CDPHE CDC)	MPD

[2] Provider directory work products of the Clinician Data Consortium, Colorado Department of Public Health & Environment (CDPHE), Primary Care Office

Data Element(s)	MPD/ MPI
eMail (CDPHE CDC):	MPD
• Email address (CDPHE CDC)	MPD
• Status (CDPHE CDC)	MPD
• Description (CDPHE CDC)	MPD
• Type (CDPHE CDC)	MPD
• Start (CDPHE CDC)	MPD
• End (CDPHE CDC)	MPD
Addresses:	MPD
• Practice Address* (all locations that physician practices)	MPD
• Alternative Billing Address	MPD
• Legal Address	MPD
• Home Address	MPD
• Address_3 (CDPHE CDC)	MPD
• County / District	MPD
• Country	MPD
• Country Code	MPD
• Province	MPD
Specializations* / Professional Information:	MPD
• Principle Clinical Specialty	MPD
• Board Certified Specialty	MPD
• Additional Clinical Practice Specialties	MPD
• Primary Field of Practice	MPD
• PCP designation / indicator	MPD
• Summary Provider Type	MPD
• Initial Certification Date	MPD
• Last Recertification Date	MPD
• Expiration Date	MPD
• Certifying Board	MPD
Specialty Codes:	MPD
• NPI Taxonomy Code	MPD
• AMA Specialty Code	MPD
• DOH Profile Codes	MPD
• Medicaid Specialty Code	MPD
• Role (Primary Care, Specialist, Both)	MPD
• Worker's Comp Codes	MPD
Board Certification/ Recertification/ Specialty:	MPD
• Certification Status (CDPHE CDC)	MPD
• Certification Number (CDPHE CDC)	MPD
• Subspecialty (ID/Description) (CDPHE CDC)	MPD
• Certification Effective Date	MPD
• Certification Expiration Date	MPD
Practitioner type: Care Coordinator, Certified Nurse Midwife, Chiropractor, Doctor of Osteopathy, Licensed Practical Nurse, Medical Doctor, Medical Technologist,	MPD

Data Element(s)	MPD/ MPI
Non-clinical Staff, Nurse, Nurse Practitioner, Optometrist, Pharmacist, Physical Therapist, Physician Assistant, Podiatrist, Registered Nurse, Other	
Status: Active, Inactive, Retired, Deceased	MPD
Languages supported*	MPD
Days / Hours Operations (link to each location where physician practices)	MPD
Provider Entity / Group Practice:	MPD
• Entity ID	MPD
• Group/Practice Name / Provider Entity Description	MPD
• Accountable Care Organization (ACO)	MPD
• IPA Association (Name)	MPD
• Hospital Ownership	MPD
• Group Effective Date	MPD
• Group Expiration Date	MPD
• Group NPI Number	MPD
• Group Taxonomy	MPD
Affiliations:	MPD
• Affiliation Status	MPD
• Affiliation Dates – Start	MPD
• Affiliation Dates – End	MPD
• Historic Affiliations	MPD
Other Professional Liability	MPD
• Professional Liability Insurance and Carrier	MPD
• Attestation Questions/Professional Liability Actions	MPD
Assigned OID (HL7 standard electronic endpoint, tied to a digital certificate)	MPD
Other professional activities (Telemedicine)	MPD
Years Since Last Provided Patient Care	MPD
Setting (CDPHE CDC)	MPD
TeleCare (CDPHE CDC)	MPD
Pay Type (CDPHE CDC)	MPD
Pay State (CDPHE CDC)	MPD
Bill Date (CDPHE CDC)	MPD
GeocodeX – Longitude (CDPHE CDC)	MPD
GeocodeY – Latitude (CDPHE CDC)	MPD
Sanctions/Actions/Convictions/Restrictions	MPD
Teaching Indicator	MPD
Termination Date	MPD
Termination Reason (Code, if available)	MPD
Organization Identifiers:	
Organization / Site Name* (Legal business name)	MPD
Doing Business As (DBA) Name	MPD
Other Organization Name	MPD
Addresses (multiple):	MPD
• Practice Address*	MPD
• Alternative/Billing Address	MPD

Data Element(s)	MPD/ MPI
• Legal Address	MPD
Federal Tax ID	MPD
Organizational NPI:	MPD
• NPI Number	MPD
• NPI Deactivation Reason Code	MPD
• NPI Deactivation Date	MPD
• NPI Reactivation Date	MPD
Department	MPD
Clinical Information Contact	MPD
Billing Information Contact	MPD
Phone/ Fax /Email	MPD
Object Identifier (OID) – http://hl7.org/fhir/sid/oid	MPD
eMail (CDPHE CDC):	MPD
• Email address (CDPHE CDC)	MPD
• Status (CDPHE CDC)	MPD
• Description (CDPHE CDC)	MPD
• Type (CDPHE CDC)	MPD
• Start (CDPHE CDC)	MPD
• End (CDPHE CDC)	MPD
DIRECT Email address(es)	MPD
Border State Indicator	MPD
Out-of-State Indicator	MPD
Entity Type / Type of Site	MPD
Setting (e.g., private office, hospital, health center)	MPD
Primary Professional Activity (e.g., patient care, admin, research, teaching)	MPD
Type of Patient Care (e.g., ambulatory, inpatient, emergency services)	MPD
Site Specialty	MPD
Days of Practice Per Week	MPD
Age Limitations	MPD
Other Limitations	MPD
Handicapped Accessible	MPD
Business Category/ Organization type: ACO, Association, Clinic, Department, HIE, Hospital, Lab, Long Term Care Facility, Medical School, Payer, Pharmacy, PO, Practice, University, Other	MPD
PCMH Status	MPD
PCMH Status Designation and Tier	MPD
Use Electronic Medical Records	MPD
Use Physician Extenders	MPD
HIV Service Referrals	MPD
Specializations/ Profession Information Specializations*	MPD
Board Certification/ Recertification Specialty	MPD
Affiliations Provider/ Organizational Affiliation*	MPD
• Affiliation Status	MPD
• Affiliation Purpose (admitting/attending privileges)	MPD

Data Element(s)	MPD/ MPI
• Effective Date of Affiliation Start/ End	MPD
• Historic Affiliations	MPD
• Affiliation with RCCO	MPD
Languages supported*	MPD
Days / Hours operation	MPD
Hours Type (Inpatient Hrs, Outpatient Hrs, Telemed Hrs, Indirect Hrs, Other Hrs)[4]	MPD
Assigned OID (HL7 standard electronic endpoint, tied to a digital certificate)	MPD
Other Professional Liability	MPD
• Professional Liability Insurance and Carrier	MPD
• Attestation Questions/Professional Liability Actions	MPD
Historic Practice or Work History Data	MPD
Practice Call Coverage	MPD
Network (CDPHE CDC):	MPD
• Network ID (CDPHE CDC)	MPD
• Accepting New Patients*	MPD
• Facility ID (CDPHE CDC)	MPD
Insurances Accepted:	MPD
• Accept Medicaid/Medicare Patients	MPD
• Medicaid Managed Care Plans/ACA Plans	MPD
• Plans Specified (multiple)	MPD
Provider Enrollment:	MPD
• Provider Enrollment Status	MPD
• Provider Enrollment Status Effective Date	MPD
• Provider Enrollment Status End Date	MPD
EHR Incentive Program data	MPD
EHR Vendor / Product /Version	MPD
Urban vs. Rural designation	MPD
All Payer Claims Data	MPD
Last Update Date	MPD

*Key provider directory requirements for health plans from the 2013 NCQA standards

8. Glossary

Acronym	Definition
ACC	Accountable Care Collaborative
ADT	Admission, Discharge, Transfer
AMA	American Medical Association
APCD	All- Payer Claims Database
API	Application Programming Interface
ARRA	American Recovery and Reinvestment Act of 2009
ARIES	System for tracking data on alcohol and drug abuse within HIV populations
BHO	Behavioral Health Organizations

Acronym	Definition
BIDM	Business Intelligence & Data Management System
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CBMS	Colorado Benefits Management System
CCAR	Colorado Clinical Assessment Record
CCMCN	Colorado Community Managed Care Network
CDPHE	Colorado Department of Public Health and Environment
CEDRS	Colorado Electronic Disease Reporting System
CHIRP	Clinical Health Information Records of Patients
CIIS	Colorado Immunization Information System
CIVHC	Center for Improving Value in Health Care
CME	Continuing Medical Education
CMHCs	Community Mental Health Centers
CMS	Center for Medicare & Medicaid Services
COHBE	Colorado Health Benefits Exchange
CORHIO	Colorado Regional Health Information Organization
COMMIT	Colorado Medicaid Management Innovation & Transformation Project
COVIS	Colorado Vital Information System
CQM	Clinical Quality Measure
DACODS	Drug/Alcohol Coordinated Drug System
DBH	Division of Behavioral Health
DHS	Department of Human Services
DOC	Department of Corrections
DORA	Colorado Department of Regulatory Agencies
eCQM	Electronic Clinical Quality Measures
EDRS	Electronic Death Registry System
EH	Eligible Hospital
EHR	Electronic Health Record
EP	Eligible Professional
FFP	Federal Financial Participation
HCPF	Health Care Policy and Financing
HIE	Health Information Exchange
HIO	Health Information Organization
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health
HIV	Human Immunodeficiency Virus
HUD	Housing and Urban Development
IAPD	Implementation Advanced Planning Document
IAPD-U	Implementation Advanced Planning Document-Update

Acronym	Definition
Interoperability	The term 'interoperability', with respect to health information technology, means such health information technology that— ''(A) enables the secure exchange of electronic health information with, and use of electronic health information from, other health information technology without special effort on the part of the user; ''(B) allows for complete access, exchange, and use of all electronically accessible health information for authorized use under applicable State or Federal law; and ''(C) does not constitute information blocking as defined in section 3022(a).''*
LITS	Laboratory Information Tracking System (LITS) Plus
MCO	Managed Care Organizations
MDM	Master Data Management
MMIS	Medicaid Management Information System
MPI	Master Patient Index
MU	Meaningful Use
MRN	Medical Record Number
NEST	Newborn Evaluation Screening & Tracking
NPPES	National Plan and Provider Enumeration System
OID	Object Identifier
OIT	Office of Information Technology
PCMH	Patient Centered Medical Home
PECOS	Provider Enrollment, Chain, and Ownership System
PRISM	Patient Reporting Investigating Surveillance Manager
RCCO	Regional Community Care Organizations
SDAC	Statewide Data and Analytics Contractor
SNF	Skilled Nursing Facility
STI	Sexually Transmitted Infections
TIN	Tax Identification Number
TRAILS	Colorado TRAILS – including child welfare (adoption, foster care, child protection) and youth corrections information, also maintains children's medical records
WIC	Women, Infants and Children

* http://docs.house.gov/billsthisweek/20161128/CPRT-114-HPRT-RU00-SAHR34.pdf, accessed 1/23/2017.

9. References

The following documents were used as reference to developing this requirements document.

Title:	By:	Date:
1. Provider Directory Brief for the Colorado eHealth Commission	CedarBridge Group	June 2016
2. Colorado Implementation Advanced Planning Document (IAPD) Update	Colorado Department of Health Care Policy and Finance	April 2016
3. Master Patient Index Brief for the Colorado eHealth Commission	CedarBridge Group	June 2016
4. Comprehensive State Health Information Management Strategy	Colorado Department of Health Care Policy and Financing & Governor's Office of Information Technology	August 2012
5. Provider directory work products of the Clinician Data Consortium	Colorado Department of Public Health & Environment (CDPHE), Primary Care Office	Various