Colorado Office of eHealth Innovation

Master Data Management (MDM)

Draft Business and Functional Requirements

for Public Comment

October 12, 2016

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 October 31, 2016.

- 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:

  o Are the descriptions correct and understandable? If not, please provide additional wording or clarifications.

  o Are any Business Needs, Use Cases, Functional Requirements missing? If so, please provide additional detail.

  o 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.

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1. Acknowledgements

This document was created with input from the following Colorado organizations and individuals through group and individual stakeholder interviews:

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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 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 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.[1] On January 15, 2016, Colorado's Department of Health Care Policy and Finance (HCPF) submitted an Implementation Advanced Planning Document (IAPD) update to request Federal Financial Participation (FFP) Health Information Technology for Economic and Clinical Health (HITECH) Health Information Exchange (HIE) administrative funding from the Centers for Medicare & Medicaid Services (CMS). This funding covers provider onboarding, as well as 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-Update (IAPD-U) aligns to HCPF's strategy for advancing Health Information Technology (HIT) 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).[2]

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. [2]

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 precision for information sharing consents and disclosures across medical, behavioral, and substance abuse information. Creating a strong and legally sound consent framework will reduce barriers to information exchange improve interoperability and enhance care coordination.[2]

The MDM will be implemented based on the state's HIE foundation to achieve a unified view of Medicaid provider and member data across the Medicaid and HIE Network. 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 the funding necessary to enable the MMIS to effectively utilize this service.[2]

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 through their eHealth Commission. To date, Colorado does not have a Master Data Management Plan 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 stake-holders 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.

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.

- The State will not "rip and replace" MDM infrastructure where it already exists.

- 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.

General Objectives

This document will be used to identify Colorado's needs and requirements for both an MPI and MPD, and also 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-CHIMS) document.[4] and are referenced with each of the business needs defined below.

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

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

3. 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.

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
	PHASE 1 BUSINESS NEEDS				
B01	Improved availability of data considered to be sensitive at the person-level, but that could be made available in aggregate for analysis and reporting.[4]	G1, G3, G4	MPI	All	1
B03	Reduce capture of data when it already exists and is available elsewhere.[4]	G1, G2, G3	BOTH	All	1
B04	Provide information in a consistent and standard format to reduce data analysis effort.[4]	G2	BOTH	All	1
B05	Information is available for real-time reporting.[4]	G1, G3	BOTH	State/Federal programs, commercial payers, CDPHE, other data senders/users, Providers – sending	1
B06	Role-based access to ensure only authorized data exposure.[4]	G1, G4	MPD	All	1
B07	Information should be auditable to ensure reliability and integrity of data for purposes including but not limited to meaningful use, credentialing, etc.	G4	BOTH	All	1

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B08	Support a strategy for accurate cost, performance, and quality measurement of providers and organizations across State and Federal programs by linking patients with the providers involved in their care.	G1, G2, G3	BOTH	Care delivery providers, other program participants required performance measure reporting	1
B09	Improve quality and efficiency of information collected through facility licensing programs to be utilized for program administration and evaluation.[4]	G1, G2	MPD	All	1
B10	Data capture should be simple and easy, using standardized data elements and collection processes that are simplified or automated.	G1, G2, G3	BOTH	All	1
B11	Administrative transactions should occur quickly and accurately. Clients and providers should be able to quickly determine eligibility and enroll in programs, leveraging online and automated processes.	G1, G2, G3	BOTH	All	1
B12	Identify, segment and maintain demographic information about individual providers and organizations registered in Colorado's MMIS.	G1, G2	MPD	Medicaid	1
B13	Make available security credential information (digital certificate and/or public key discoverability), using national accreditation standards and national security standards.	G1, G4	BOTH	All	1
B14	Credibility/integrity of data elements (including age of data).	G1, G2	BOTH	All	1

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B15	Support the ability to support a single payment to a single provider, for a single patient.	G1, G2, G3	BOTH	All	1
B16	Accurate attribution of in-network providers to associated plans (e.g., RCCOs, health plans).	G1, G2	MPD	RCCOs, Health Plans	1
B17	Individual providers must be attributable to all of the organizations they bill under to provide care for Medicaid patients.	G1, G2	BOTH	RCCOs	1
B18	Individual providers must be attributable to all of the clinics where they practice/ provide care for Medicaid patients, including charity care.	G1, G2	BOTH	Medicaid, RCCOs	1
B19	Must support analytics for determining network adequacy.	G1	BOTH	Medicaid, RCCOs	1
B20	Facilitate patient-level interoperability to support care coordination activities and identify use cases for patient matching and data integrity.	G1, G2, G3	MPI	RCCOs	1
B21	Accurately identify the correct patient for quality of care measurement and improvement.	G1, G2, G3	MPI	RCCOs, Providers, public/private payers	1
B22	Ensure better quality of care in clinical settings and across data systems by allowing stakeholders to identify where/how/why the patient is being treated.	G1, G2, G3	MPI	RCCOs	1
B23	Reduce patient-matching errors by identifying duplicate patient records for correction.	G1, G2	MPI	RCCOs	1

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B24	Support MPI information for multiple settings (e.g., acute, ambulatory, long-term care, state agencies) to ensure data interoperability across provider and care settings and data integrity in care delivery, community settings, including non-health settings and their associated data systems.	G1, G2, G3	BOTH	RCCOs	1
B25	Improve program administration and reduce fraud, waste and abuse by linking health provider licensing and certification information to provider data in MMIS.	G1, G2	MPD	RCCOs	1
B26	Improve Medicaid program administration by linking provider licensure information.	G1, G2, G3	MPD	RCCOs	1
B27	Receive timely updates to health professional licensure information and augment the process of information exchange with DORA.	G1, G2	MPD	RCCOs	1
B28	Utilize facility billing to support information exchange with CDPHE to receive initial and timeline updates to health facility licensure information.	G1, G2, G3	MPD	RCCOs	1
B29	Provide actionable health information to Medicaid providers, enrollment services, and program administrators, plus reduce administrative burdens and improve effectiveness linking CDPHE registries to MMIS.	G1, G2, G3	BOTH	RCCOs	1

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B30	Improve the effective management of the Medicaid program, as well as an interest in accessing individual and aggregate data from others to help assess clinical outcomes and conduct performance analytics by providing connections to CDPHE registries.	G1, G2, G3	BOTH	RCCOs	1
B31	Provide actionable health information to Medicaid providers, benefits management services, and program administrators to reduce administrative burden and improve effectiveness by linking mental health and substance use treatment information with Medicaid systems.	G1, G2, G3	BOTH	RCCOs	1
B32	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.	G1, G2, G3	BOTH	RCCOs	1
B33	Ability to maintain expiration status of persons that have died.	G1, G2	BOTH		1

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
PHASE 2 BUSINESS NEEDS					
B34	Maintain source of data.	G1, G4	BOTH	Private health partners (providers, commercial payers, others), HIEs, APCD, HCPF, DHS, CDPHE, Other agencies deemed in scope, and All health data system/sources/users	2
B35	Link claims info to clinical, and tie-in with social (non-health) organizations.	G1, G2, G3	MPI	Commercial payers, providers, HIEs, APCD, HCPF, DHS, CDPHE	2
B36	Improve data quality from data sources.	G1, G2, G3	BOTH	Private health partners (providers, commercial payers, others), HIEs, HCPF, DHS, CDPHE, other data sources	2
B37	Improved ability to link providers with their specialties, practices, health systems, payment networks, etc.	G1, G2, G3	MPD	Private health partners (providers, commercial payers, others), HIEs, HCPF, CDPHE, local public health agencies, State/Federal/Medicaid programs and grants	2
B38	Provide a consistent view of information over time.[4]	G1, G2	BOTH	Private health partners (providers, commercial payers, others), HIEs, APCD, HCPF, DHS, CDPHE, Other agencies deemed in scope	2

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B39	Provide a reference architecture of information made available to state agencies, including governance and standards around available information.[4]	G1, G2	BOTH	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
B40	Provide a one stop source of comprehensive provider information, which other sources can use to validate their provider information.[4]	G2, G3	BOTH	Providers, CDPHE	2
B41	Ensure accurate education, practice location, practice characteristics, and billing relationships for all licensed and registered clinicians in the state of Colorado.[5]	G2	MPD	DORA, HCPF, providers, other users of provider data, policy/researchers, HIEs, providers, commercial and public payers, Connect to facility data	2
B42	Reduce data entry and information duplication across program administrative transactions.[4]	G1, G2	BOTH	All	2
B43	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.	G1, G2	BOTH	All	2

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B44	Administrative information should be captured once and made available as needed across many areas.	G1, G2, G3	BOTH	All	2
B45	Provide information contained in HIE 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 with hospitals, accurate and up-to-date contact information, and national provider identifiers, among others.[4]	G1, G2	MPD	State agencies with health data/systems	2
B46	Data sharing processes should occur through standardized and solid integration methods that work reliably despite system upgrades, enhancements or system replacements.	G1, G3	BOTH	All	2
B47	System should make it easier to publicly share accurate information for use by citizens, businesses, policymakers, and researchers following required access rules.	G1, G3	BOTH	All	2
B48	Allow provider directory access by authorized organizations and individuals including non-health providers via a standard web-services model.	G1, G3, G4	MPD	Medicaid	2
B49	Make compressed and expanded views for a single provider in the directory, rather than a long series of single records (expandable view).	G3	MPD	Medicaid	2

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B50	Must provide geo-mapping identifiers to identify workforce shortages.	G2, G3	BOTH	RCCOs	2
B51	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.	G1, G2, G3	MPI	All	2
B52	Common key to link a patient to external data sources.	G1, G2, G3, G4	BOTH	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	2
B53	Improve patient matching rates.	G1, G2, G3	MPI	Private health partners (providers, commercial payers, others), HIEs, HCPF, CDPHE, RCCOs, CMHCs, PCPs	2
PHASE 3 BUSINESS NEEDS					
B54	Identify and differentiate billing provider from servicing provider.	G1, G2, G3	BOTH	Public and commercial payers	3
B55	Make relevant health information available at the point of care and for performance analysis.[4]	G1, G2, G3	BOTH	Providers and care teams	3

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B56	Define comparisons with other communities, the state and nation.[4]	G2	BOTH	CDPHE (state and local), HCPF (Medicaid), policy, research stakeholders	3
B57	Health and health administrative information is effectively and efficiently collected by multiple agencies with multiple data sources through logical and streamlined workflows that reduce administrative burden wherever possible. [4]	G1, G2, G3	BOTH	Providers, HIEs, CDPHE, state agencies in health scope	3
B58	Collect and re-purpose CQMs submitted through Meaningful Use attestations.[4]	G1, G2, G3	BOTH	Eligible professionals and hospitals	3
B59	Support streamlined options for electronic reporting of CQMs, leveraging functionality provided for HIE and repurposing existing interfaces and connectivity.[4]	G1, G2, G3	BOTH	Care delivery providers, other program participants required performance measure reporting	3
B60	Develop functionality to capture clinical data included in Medicaid claims and claims attachments to be included in longitudinal health records.	G1, G2, G3	BOTH	HCPF, HIE, RCCO, Medicaid providers	3
B61	Ability for participating health care providers to query longitudinal health records.	G1, G2, G3	BOTH	All providers	3

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B62	There should be a high level of interoperability* and integration between health systems, databases, and programs, enabling standardized data exchange for individuals moving between and across health services and programs.	G1, G2, G3	BOTH	All	3
B63	System should support the ability for state and community health services to be administered efficiently and effectively.	G1, G2	BOTH	DHS, community services, providers, public/private payers, patients	3
B64	Provide unambiguous electronic addresses of message/ transaction senders and receivers for health information exchange, using national standards.	G1, G2, G3	BOTH	Medicaid, HIEs, providers, commercial payers, DHS	3
B65	Linkages from the MPI to the Master Provider Directory for attribution of Medicaid clients to providers and organizations where care has been delivered.	G1, G2	BOTH	Medicaid, Medicaid providers and clients	3
B66	Support communications between providers and CDPHE communicable disease registries / syndromic surveillance system	G1, G2, G3	BOTH		3
B67	Support communications between providers and CDPHE immunization registry.	G1, G2, G3	BOTH		3
B68	Support home health and community health workers in ability to participate in health information exchange (including access to Direct addresses).	G1, G2, G3	BOTH		3

ID	Business Need	General Objective(s)	MPI/MPD	Customer(s)	Base Phase Year
B69	Support case workers with accurate provider information and the ability to participate in health information exchange (access to Direct addresses).	G1, G2, G3	MPD		3

* Term defined in Glossary.

4.   Use Cases

The following use cases were identified by stakeholders through both group and individual interviews. Use cases where Medicaid was the primary customer are prioritized to be in phase one, while use cases involving the connections with DORA and CDPHE are prioritized into phase two, and connections with external partners are prioritized into phase three.

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
		PHASE 1 USE CASES		
U01	HCPF - Medicaid care coordination	Improve care coordination by: 1) connecting medical homes using MPI to identify other organizations that have clinical data (e.g. find x-ray reports, prescriptions, etc. from other data sources for newly enrolled clients); 2) Care coordinators should have their own ID to avoid generating duplicate care plans for a single client; and, 3) Connecting patients/clients with non-health provider community.	Medicaid, RCCOs, FQHCs, private care coordination services	1
U02	HCPF - provider outreach	Individual provider outreach. Client calls the call center to request a provider that is not in the Medicaid program. Staff member uses the MPD to lookup provider contact information and outreach.	Medicaid	1
U03	Provider Marketing/ Communication	Provider marketing. Medicaid obtains a list of non-Medicaid providers from the MPD system based on criteria so they can be contacted for possible participation.	Medicaid	1
U04	Provider Maintenance	Provider maintenance. Any updates that occur in the MPD (i.e., address change) for Medicaid providers should be pushed to MMIS for keeping the system current.	Medicaid	1

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
U05	HCPF - Medicaid Provider List	Support the ability for providers to enter and maintain their information in one place, which can be connected with: 1) Colorado's Medicaid enterprise; 2) DORA to receive timely updates to health professional licensure information. Information and updates to professionals' license from DORA will be captured and updated weekly; 3) Issue re-enrollments and notices when license information has expired, and interact with other state databases (and federal databases if applicable) to verify current licensing information; and, 4) Colorado's Human Services Agency with accurate and up-to-date information about the healthcare providers and organizations serving Colorado's vulnerable populations with health-related services.	Medicaid	1
U06	Patient attribution	Provide support for patient attribution between patients/clients and providers in order to: 1) Develop and manage client enrollment in the program and client attribution to specific Regional Care Collaborative Organizations and Primary Care Medical Providers; 2) Identify practice integration between behavioral health and primary care; and, 3) Plan attribution and Central Quality Measurement calculation and reporting, where "the metric follows the client" (plan info flows into the MPD).	All	1
U07	Provider Attribution	Support linkage between providers and their various networks (e.g., practices, health systems, ACOs, payers), as well as clinic locations and biller for each service.	RCCOs, Medicaid, All	1

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
U8	HCPF Medicaid provider HIE	Medicaid providers engage in state-wide interoperability of health information for care delivery, care coordination and Medicaid provider care teams, notifications to Medicaid providers/RCCOs, improve patient matching, improve identity management services.	All	1
U9	HCPF COMMIT BIDM	The ability to link information with the 80 different data sources connected (or in process) to BIDM, including Federal, State, and private sources. An MPI would greatly improve this linking within the BIDM system.	Medicaid, RCCOs	1
U10	Medicaid immunization gap outreach	Medicaid program administrators, with the proper data use agreement, can request immunization records from Department of Public Health and Environment for only those individuals currently enrolled in Medicaid. This would enable the Medicaid program to target outreach and improve immunization rates.[4]	Medicaid	1
U11	ACC support	Support the Medicaid Accountable Care Collaborative (ACC) program by supporting sophisticated analytics including predictive modeling to create client risk scores, performance monitoring and benchmarking, evaluating utilization variances, and creating provider profiles.	ACC, Medicaid	1

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
U12	HCPF BH data integration for service analytics	Supporting the capture of mental health and substance use treatment information in a streamlined manner and linking to Medicaid systems to provide actionable health information to Medicaid providers, benefits management services, and program administrators to reduce administrative burden and improve effectiveness.[4]	All HCPF, DHS, OBH, CMHC,	1
U13	MH/SUD administrative data	Supporting an integrated data collection tool, DACODS and CCAR assessment data so the information can be handled more effectively. (Effort Data Integration Initiative (DII))	Medicaid, DHS, OBH, CMHCs	1
PHASE 2 USE CASES				
U14	HCPF - PH data integration	Link public health registries to MMIS to provide actionable health information to Medicaid providers, enrollment services, and program administrators and reduce administrative burden and improve effectiveness.[4]	Medicaid, CDPHE	2
U15	Provider administrative data updates	Support a central source of truth for provider updates (i.e., Addresses, Panel size, Office hours, Languages)	All	2
U16	CDPHE provider data exchange	Improve linkage between CDPHE providers and MMIS data. For CDPHE providers, the licensure data may not be as easily matched to MMIS data as for DORA providers. The same facility as recorded at CDPHE could be enrolled with HCPF multiple times as multiple provider types. The matching of names is complicated by the use of doing-business-as (DBA) names by MMIS (but not by CDPHE).	CDPHE, Medicaid	2

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
U17	Provider administrative data verification/ enrollment	Online application collects the required information from providers, related databases that are necessary to issue re-enrollments and notices when license information has expired, and interacts with other state databases (and federal databases if applicable) to verify current licensing information.	All	2
U18	MU PH reporting and registry data integration	Connect CDPHE registries relevant to the Meaningful Use program including: • 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 • Other specialized registries – Advanced Directives, Consent Management	Medicaid, CDPHE, RCCOs, Eligible Professionals, Eligible Hospitals	2
U19	Health Workforce Assessment	Workforce Assessment: Network Analysis and Adequacy - Track specialties and location to identify health professional shortage areas.[5]	CDPHE, Medicaid, RCCOs	2
U20	Prevention Services	Prevention Services: Program level data gathering surveys of various provider types. (e.g., Diabetes prevention). Need accurate denominator for selected provider groups.[5]	CDPHE, Medicaid, RCCOs, Public Health	2
U21	Disease Control - Outbreak	Disease Control: Outbreak investigations - Support epidemiological disease investigations through communications to specific clinicians.[5]	CDPHE, local PH	2

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
U22	Disease Control - STD/HIV/AIDs provider services	Disease Control: Sexually transmitted disease follow-up and CO Aids Drug Assistance Program. Maintain specific clinic/provider profiling information to connect patients to appropriate care.[5]	CDPHE, Medicaid, RCCOs	2
U23	Registry - Muscular dystrophy provider	Health and Environmental Data: Muscular dystrophy surveillance provider information. Support physician contacts for reporting and information dissemination.[5]	CDPHE	2
U24	License and Registration - HPPP	License and Registration: Clinician Profiling System. Support state statute for public reporting about providers.[5]	DORA	2
U25	DOI - Network adequacy	Division of Insurance: Network adequacy analysis. Support statutory requirement to regulate health plans in Colorado. Demonstrate health plans have an adequate provider network.[5]	DORA	2
U26	HCPF - Vital statistics (birth/ death data)	Link between Medicaid administrative systems and COVIS[4] (Vital Statistics) for: - Dis-enrolling deceased clients and providers in an efficient and effective manner - Confirming identity and citizenship requirements to establish eligibility for Medicaid benefits - Tracking and recording births including information about method of delivery, weeks' gestation, and birth outcomes to assist with performance and outcomes measurement - Tracking and recording cause of death information to assist with performance and outcomes measurement	Medicaid, RCCOs, CDPHE	2

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
		PHASE 3 USE CASES		
U27	Analytics - patient/ client matching	Provide patient matching services, in order to: 1) replace back-end patient matching for analysis (e.g., high-utilizers) with real-time matching; 2) Ensure that patient info from multiple facilities is de-duplicated and patients/conditions are not double-counted in public health studies; 3) 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; and, 4) Ensure the ability to match administrative data with clinical information in data exchange with HIEs; and, 5) Reduce duplicate accounts, insurance registrations, and validations for claims and billing.	Non-State Partners, State public health, local public health, research, Medicaid client analytics	3
U28	Data integrity	Data cleanliness is needed to improve quality reporting, payment and outreach/care coordination.	Non-State Partners, state data systems	3
U29	Data system integration and interoperability	Support for common applications across the community that may or may not exist today such as population health tools, care management tools, or other efforts to integrate disparate data sources into new platforms.	Non-State Partners	3

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
U30	Emergency Preparedness	Emergency Preparedness: Disaster assessment, response and recovery. Office of Emergency Preparedness needs to know what clinicians are available by location for planning and responding to mass casualties and issuing health alerts.[5]	CDPHE, Medicaid, RCCOs, All	3
U31	HIE - Secure messaging	Support provider matching and updates to allow/improve: 1) Secure messaging for Meaningful Use. 2) APCD: billing and cost research for the all claims payer database (APCD) to compare billing information.[5]	Eligible providers and hospitals, Medicaid providers, outside organizations: CORHIO, QHN, CCMCN, etc., CIVHC, policy, research, etc.	3
U32	HIX - Qualified Health Plan networks provider look-up	Insurance Exchange: Provider look-up Each health insurance exchange needs a provider directory lookup for customers on the exchange.[5]	Insurance Exchange, consumers	3
U33	Health Workforce Research	Research – Workforce research regarding trends, capacity, pay scales, etc. to support direct survey methods. Support for multiple clinician types including all licensed professionals in the State[5]	Colorado Health Institute, University of Colorado School of Medicine, Colorado Center for Nursing Excellence, OEDIT, Workforce Development Council	3

ID	Short Title	Use Cases	Customer(s)	Base Phase Year
U34	PH - public health program providers	Support Colorado's Public Health Department with accurate and up-to-date information about the healthcare providers and organizations participating in public health programs, and prepared to provide services in the event of a public health crisis.	Possible future need	3
U35	DOC - Corrections/ Justice/ Health providers	Support Colorado's Dept. of Corrections and city/county jails with accurate and up-to- date information about the healthcare providers and organizations providing healthcare services to inmates and parolees.	Possible future need, ACC, CMHC	3
U36	DOC - Corrections/ Justice/ Health providers	Support Colorado's Dept. of Corrections and city/county jails by leveraging identity management to help reduce recidivism through health information sharing.	Possible future need	3

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.

ID	Functional Requirements	MPI/MPD
F1	Data must be searchable, query-able, and integrate-able with other data sources.[4]	BOTH
F2	System must be secure, scalable, reliable and sustainable.[4]	BOTH
F3	The quality of each record must be easy to review and verify against a system generated reliability score.[4]	BOTH
F4	Ability to share MPI identifiers from other systems.	MPI
F5	Must support ability to accept data from disparate data sources.	BOTH
F6	MPI must account for patients that move / have one or more aliases.	MPI
F7	MPD must support one to many linkages (who/where/what).	MPD
F8	Identifying algorithms should have a high-degree of statistical confidence.	MPD
F9	Maintenance of unique identification information in the form of a "golden record", or, in other words, the master data representing the minimum set of data used to uniquely identify a specific person.[4]	MPI
F10	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.[4]	MPI
F11	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).[4]	MPI
F12	Ability to interface with existing and future systems, including mainframe systems that require a web services interface (SOAP, REST). [4]	BOTH
F13	Capability to audit activity across entire system.[4]	BOTH
F14	Provision of an enterprise bus or other service that allows for a "publish/subscribe" technical implementation with a secure transmission of data.[4]	BOTH
F15	IHE Profile web services-based exchange with Application Programming Interface.	MPI

ID	Functional Requirements	MPI/MPD
F16	Digital certificate / public key discoverability meeting national accreditation/testing standards (DirectTrust, eHealth Exchange) and national security standards (NIST Level 2 or 3).	BOTH
F17	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
F18	Share and integrate MPI demographic data with registration/admission systems.	MPI
F19	Ability to add new patients using existing registration, admission or scheduling process.	MPI
F20	Ability to add new patients or revise demographic data for existing patients in MPI outside of registration/admission process.	MPI
F21	Ability to provide real-time access to the MPI from other, interfaced systems. Please indicate interface standards supported.	MPI
F22	Ability to notify all systems when new patients are added or when demographics are updated by another system.	MPI
F23	Support MPI across the continuum of care: acute care, ambulatory, physician office, SNF, home health, and ancillary services.	MPI
F24	Support an enterprise number as well as separate, multiple medical record numbers, including host systems have a patient identifier hierarchy consisting of multiple patient identifiers internal to that system.	MPI
F25	Support different numbering schemes to accommodate each facility's patient identifier.	MPI
F26	Provide cross-reference indices that link the MPI number to the facility-specific number.	MPI
F27	Identify duplicate patient histories/medical record numbers.	MPI
F28	Alert the user of a potential duplicate during registration process without producing multiple alerts for the same registration.	MPI
F29	Do not allow manual assignment of MPI numbers; the MPI system should manage assignment of the enterprise identifier.	MPI
F30	Store individual encounter information at the MPI level with the last encounter visit/date of service.	MPI
F31	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

ID	Functional Requirements	MPI/MPD
F32	Provide merge capability for 2 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
F33	Support for sending/receiving HL7 merge transactions (e.g., A18, A30, A34).	MPI
F34	Provide capability to un-merge records incorrectly merged, and correct guarantor information must remain intact during un-merge.	MPI
F34	Provide linking capability for 2 records for same person in different host systems.	MPI
F36	Provide capability to un-link records that were incorrectly linked.	MPI
F37	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
F38	Do not allow registration/enrollment of a deceased patient. Flag deceased patients and integrate information with registration and clinical modules.	MPI
F39	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
F40	Support custom fields.	BOTH
F41	Support alternative name/alias processing.	BOTH
F42	The system should provide customizable workflow queues for assignment of tasks (e.g., provide a work queue to review potential duplicates).	MPI
F43	Ability for end users to customize or manipulate the product screens and placement of returned data to accommodate individual user preference.	BOTH
F44	Ability to assist end-user in preventing fraudulent use of identity.	BOTH
F45	Provide on-line inquiry and retrieval capabilities to the MPI history for an unlimited number of years.	MPI
F46	Generate a report indicating patients with multiple medical record numbers.	MPI
F47	Ability to write ad-hoc reports on all MPI data fields with a standard report writer application.	MPI
F48	Maintenance of user audit detail and ability to report on MPI activity.	MPI
F49	The system should provide reports that identify duplicates by user, area and facility.	BOTH

ID	Functional Requirements	MPI/MPD
F50	The system should provide tools for setting up automatic distribution of reports.	BOTH
F51	The system should provide a high-level dashboard for managerial review.	BOTH
F52	Provide multiple level reporting (i.e., internal, external, agency, division and facility level reporting).	BOTH
F53	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.	BOTH
F54	The system should allow users security to be configured for different levels of access depending on the entity.	BOTH
F55	System administrators should have the ability to control viewing and printing of reports, and limiting access to these functions.	BOTH
F56	Support for both probabilistic and deterministic matching algorithms.	MPI
F57	Support both an Entity Level Provider Directory (ELPD) and an Individual Level Provider Directory (ILPD).	MPD
F58	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
F59	The Provider Directory has a process for synchronizing to a statewide DOH/HHS provider directory.	MPD
F60	The application has a process for resolving unmatched and/or overmatched providers.	MPD
F61	The application has a process for consuming additional provider data from connected entities.	MPD
F62	The application has a process disassociating records from each other received from multiple connected entities that were inadvertently matched.	MPD
F63	The application has a process for merging providers from a single connected entity.	MPD
F64	The application has a process for splitting providers from a single connected entity.	MPD
F65	The application has a process for reporting on records that require attention such as potential matches and or inconsumable records.	MPD
F66	The application has a process for updating provider data.	MPD
F67	The application has a process for incorporating new data sources	MPD
F68	The application has a process for interacting with foreign applications.	MPD

ID	Functional Requirements	MPI/MPD
F69	The application has a process for consuming, managing and distributing information on which services and associated formats a connected system uses.	MPD
F70	The application has a process for providing performance metrics.	MPD
F71	The application has a process for managing users.	MPD
F72	System should have the capability to push updated information back to source systems as requested.	BOTH
F73	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

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".[4]

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.

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 MDM.

Proposed Data Sources
Providers (via EHR, HIE, web-portal)
Labs/hospitals (via EHR, HIE, web-portal)
Medical licensing database (Department of Regulatory Agencies—DORA)[4]
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)[4]
Statewide Data and Analytics Contractor (SDAC)[4]
Colorado Benefits Management System (CBMS)
All Payer Claims Database (APCD) – CIVHC
AMA provider files
Connect for Health Colorado

Proposed Data Sources

CDPHE Registries[4]:

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:
  o eHARS (HIV and AIDS);
  o TBdb (tuberculosis);
  o Viral Hepatitis;
  o Prenatal Hepatitis and Hepatitis-B in pregnant women;
  o 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 Tracking System (LITS) Plus – maintains chemistry, microbiology, and toxicology lab reports
- Refugee Case Management Data – from refugee health clinics
- Outbreak Management – disease outbreak data

Department of Human Services (DHS)[4]:

- 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
- 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

Proposed Data Sources
Department of Corrections (DOC)[4]:
• 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
Non-State 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:	
• Medical Record Number	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

Data Element(s)	MPD/ MPI
• Social Security Number (9-digit)	MPI

• Full Address:
   ○ Address 1 (Street)
   ○ Address 2 (Apt / Suite)
   ○ City
   ○ State
   ○ Zip Code
	MPI

• Race / Other Race	MPI
• Hispanic Indicator	MPI
• Ethnicity 1 / 2 / Other	MPI
• Home Telephone	MPI
• Cell Telephone	MPI
• Primary Email Address	MPI
• Other Email Address	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
Primary Care Physician	MPI
Active Care Team Member(s)	MPI
Last Update Date	MPI
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

Data Element(s)	MPD/ MPI
• Type of Professional (e.g., M.D., P.A., etc.)	MPD
• Fax	MPD
• 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[5]	MPD
• License Mod[5]	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)[4]	MPD
• DORA License Key[5]	MPD
• Tax ID (TIN)[5]	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[5]:	MPD
• Educational Commission for Foreign Medical Graduates (ECFMG) Number	MPD
• Education Date[5]	MPD
• Degree School	MPD
• Degree Level[5]	MPD
• Degree Type[5]	MPD

Data Element(s)	MPD/ MPI
• Resident[5]	MPD
• Fellow[5]	MPD
eMail[5]:	MPD
• Email address[5]	MPD
• Status[5]	MPD
• Description[5]	MPD
• Type[5]	MPD
• Start[5]	MPD
• End[5]	MPD
Addresses:	MPD
• Practice Address* (all locations that physician practices)	MPD
• Alternative Billing Address	MPD
• Legal Address	MPD
• Home Address	MPD
• Address_3[5]	MPD
• County / District	MPD
• Country	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[5]	MPD
• Certification Number[5]	MPD
• Subspecialty (ID/Description)[5]	MPD
• Certification Effective Date	MPD

Data Element(s)	MPD/ MPI
• Certification Expiration Date	MPD
Practitioner type: Care Coordinator, Certified Nurse Midwife, Chiropractor, Doctor of Osteopathy, Licensed Practical Nurse, Medical Doctor, Medical Technologist, Non-clinical Staff, Nurse, Nurse Practitioner, Optometrist, Pharmacist, Physical Therapist, Physician Assistant, Podiatrist, Registered Nurse, Other	MPD
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[5]	MPD
TeleCare[5]	MPD
Pay Type[5]	MPD
Pay Stat[5]	MPD
Bill Date[5]	MPD
GeocodeX – Longitude[5]	MPD
GeocodeY – Latitude[5]	MPD
Sanctions/Actions/Convictions/Restrictions	MPD
Teaching Indicator	
Termination Date	
Termination Reason (Code, if available)	

Data Element(s)	MPD/ MPI
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
• 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[5]:	MPD
• Email address[5]	MPD
• Status[5]	MPD
• Description[5]	MPD
• Type[5]	MPD
• Start[5]	MPD
• End[5]	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

Data Element(s)	MPD/ MPI
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
• 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[5:]	MPD
• Network ID[5]	MPD
• Accepting New Patients*	MPD
• Facility ID[5]	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
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
EH	Eligible Hospital
EHR	Electronic Health Record
EP	Eligible Professional
FFP	Federal Financial Participation
HCPF	Health Care Policy and Financing
HIE	Health Information Exchange

Acronym	Definition
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
Interoperability	"Interoperability describes the extent to which systems and devices can exchange data, and interpret that shared data. For two systems to be interoperable, they must be able to exchange data and subsequently present that data such that it can be understood by a user."*

"Interoperability: Ability of a system or a product to work with other systems or products without special effort on the part of the customer. Interoperability is made possible by the implementation of standards."** |
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://www.himss.org/library/interoperability-standards/what-is-interoperability, accessed 9/26/2016.

** http://www.ieee.org/education_careers/education/standards/standards_glossary.html, accessed 9/26/2016.