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<th>HIE-Enabled Statewide Service</th>
<th>Implications for Providers</th>
<th>Implications for HIOs</th>
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<td><strong>Required Reciprocal HIO Services</strong></td>
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<tr>
<td><strong>1. Specific Transactions</strong></td>
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| Care coordination transactions (e.g., alert notification, medication history, care summary). Transactions need to be standardized and applied commonly across HIOs for effective HIE statewide. | • Maintain participatory agreement with HIO  
• Contribute data to HIO for querying  
• Have technology capable of complying with HL7 standards  
• Manage EHR vendor relationship  
• Contribute resources for testing transactions – often underestimated  
As technology improves, capture and send transactions as discrete data fields to HIOs. Provider workflow requires provider to be in HIO system (e.g., provider portal) or embed the HIO technology access into their EHR | • Large data repository requirement  
• Enterprise Master Patient Index capability, incur cost of additional lives and/or additional storage costs  
• Requires Business/Rules Engine with ability to send outbound transactions based on rules  
• Maintain reciprocal agreements with all HIOs  
• Ongoing meetings and consensus building with all other HIOs as new services added – need Governance Model  
• Obtain approval from HIO Governance Advisory Boards for implementation of expanded services  
• Capability within State-Certified HDI of the HIO to normalize the data received from the provider and aggregate in a longitudinal view of documents in the correct individual’s record  
• May accept transactions for sharing with providers such as alert notification, summary of care, lab results, radiology results, MDM, immunizations |
| o Admission notification and alert (ADT) for hospital admit  
o Inpatient Discharge notification (ADT) for hospital discharge  
o ED Admission notification and alert (ADT) for an ED visit  
o Summary of Care (CCDA) for end of provider or facility visit  
o Transition of Care or Referral (CCDA)  
o Laboratory result transactions (ORU) | | |
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| 2. Query-Based Capabilities      | · Follow Interoperability Standards Advisory (latest addition) and IHE Technical Frameworks (XDS.b)  
· Based on capabilities of EHR vendor, providers may query directly from the EHR, or may log into a provider portal to query information on an individual  
· Provider will have consent from patient before querying additional individual information from HIO, based on the organization’s privacy and consent policies  
· Without consolidated summary of care access, providers will receive a list of available documents for a specified individual to open as desired | · Follow Interoperability Standards Advisory (latest addition) and IHE Technical Frameworks  
· Ability to offer consolidated information limited by lack of discrete data from provider EHR capabilities – as more providers with more mature EHR capabilities connect to HIOs, discrete data will be available for consolidated information querying by providers  
· Requires consent management based on ADTs received from providers, so only those individuals who have consented to HIE sharing will have data available for provider/care coordinator view, based on role accessibility determined by HIO Governance Advisory Board  
· Capability within State-Certified HDI of the HIO to consolidate the data received from the provider, when discrete data is being shared |
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| **3. Consent Services**                                                                      | • Update consent forms for HIE sharing  
• Individuals provide consent with each provider as opt-in, or not checking the box to opt-out, of health information sharing through HIE.  
• The providers capture and transmit consent status in a standardized manner. Consent and health information of individuals are shared with one State-Certified Health Information Organization (HIO).  
• When a care provider queries the HIO for an individual who has not opted-in, or has checked the box to opt-out, of health information sharing through HIE, the provider will not see that individual in the list of patient record options. | • Each HIO uses patient matching algorithms to determine when new information on an individual is to be aggregated (added to) a current individual record in the system. Additional resources required when individual data is not able to be matched.  
• The HIO maintains consent status for each individual based on privacy and consent rules determined by the HIO Advisory Board and meets Minnesota’s privacy and consent laws.  
• Individual health information is shared between HIOs only if the consent status is turned on at the time the information is shared or requested.  
• Each HIO has a process for individuals who would like to change their consent status for HIE.  
• Access to individual data requires consent, authentication, role-limitation, and access logs - with routine audits, notification of breeches, and documentation of processes and improvements. |

Currently each provider organization collects Treatment, Payment and Healthcare Operations (TPO) and HIE consent at different times (e.g., each encounter visit, once each year, once and done) based on their legal department recommendations to meet the Minnesota Laws. This decision would continue to be at the provider organization level.
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<td><strong>4. Public health transactions services</strong></td>
<td>Providers may choose to utilize HIOs to send required reporting to MDH, reducing resource set up and maintenance costs.</td>
<td>Value enhanced service as these transactions are already requested by HIOs for querying from providers.</td>
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<td>e.g., acute and chronic disease reporting, immunization exchange, newborn screening, cancer, stroke and other registries.</td>
<td>Up to 23 different registries could be requesting electronic information in coming years from providers.</td>
<td>Capability of sending and receiving program and registry data is dependent on MDH readiness to share information.</td>
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<td>o Immunization transactions (CVX)</td>
<td>Registries could be requiring bi-directional sharing in the future.</td>
<td>HIO can act as intermediary for provider with MDH programs.</td>
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<td>o Electronic Laboratory Reporting transactions (ORU)</td>
<td>Provider organizations need to map their codes to appropriate nomenclature (e.g., Laboratory required reporting)</td>
<td>Ensure incremental implementation of registry information sharing statewide.</td>
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<td>o Electronic Case Reporting (CCDA) - when CCDA sent end of provider visit to HIO</td>
<td></td>
<td>MDH staff not currently allowed by Health Records Act to query HIO repositories for electronic information on individuals they are following after being reported to MDH for follow-up. However, they may drive to the facility and view the medical record (written or electronic).</td>
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### Optional and Emerging HIO Services

#### 5. Cohort or Attributed Population Analytic Services:

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<td>Data analytics which may include data normalization, aggregation and consolidation using clinical and claims data.</td>
<td>- When the individual consent status is turned on, the individual’s health information may be used within the HIO (and for its participating providers) for cohort analysis to have better health and financial outcomes of an attributed population. This may include monitoring cohorts for better care coordination, allowing for participation in reimbursement systems such as value-based payment, and contributing to predictive analysis and provider performance reporting.</td>
<td>- Issue beyond Medicaid attributed populations assigned to IHPs. How are all individuals of the population assigned to one HIO for maintaining a full data repository on assigned individuals? - Requires standardized discrete data sent to HIOs for analytic capabilities - Claims data from multiple payer sources needed for each HIO. - Data normalization a large part of work effort for this service. As consensus reached for statewide transaction standards, providers can improve standard message information being sent.</td>
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- Includes Clinical Data  
- Includes Claims data

#### 6. Individual Health Information Services

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<td>Access to complete, consolidated longitudinal record (e.g., repository or community level patient portal) with additional capabilities (e.g., consent management, transmit to caregivers or providers, upload home monitoring data, etc.)</td>
<td>- Community Personal Health Record may help engage individuals in their health, keep providers and care coordinators better informed on home monitoring data, and allow increased control for individuals over the use and sharing of their health information. - Allows for electronic referrals, scheduling, and bill payment for individuals.</td>
<td>- Same as #5 - Issue of sustainability. Would this availability allow a provider to meet Meaningful Use requirement to View, Download and Transmit personal health data? - Issue of individual engagement. How would individuals be engaged as stakeholders in the development use of these services?</td>
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- Community Personal Health Record may help engage individuals in their health, keep providers and care coordinators better informed on home monitoring data, and allow increased control for individuals over the use and sharing of their health information. - Allows for electronic referrals, scheduling, and bill payment for individuals.
### HIE-Enabled Statewide Service | Implications for Providers | Implications for HIOs
--- | --- | ---
#### Optional and Emerging HIO Services
#### 7. Population Health/Registry Services:

Access to critical population health data sources/registries (e.g., public health registries, opioid prescriptions), public health alerting, and emergency preparedness monitoring/planning.

- With statewide consensus and incremental implementation, other (non-MDH) programs who use and share provider collected/approved individual data may be set up to receive information sent through the HIO (e.g., Minnesota Prescription Monitoring Program, reporting adverse events to Patient Safety Organization)
- Population health level analysis may contribute to research protocols, best practices, and comparative effectiveness research.
- Potential for providers, including Local Public Health, access to de-identified data for targeted geographic area for Community Health Assessment

- Same as #5 and #6
- Need statewide consensus on de-identifying individual health data for population health analysis.
- When discrete data received, normalized, aggregated, consolidated, and de-identified, it may be used for assessing entire populations, evaluating effectiveness of public health programs, and monitoring emergency preparedness.
- Laws unclear if MDH staff are currently allowed by Health Records Act to query HIO repositories for population health analysis (de-identified individual data) to find emerging trends and health inequities.