



## Supplemental Information

### Federated Query: An Emerging Model for Surveillance

Today's technologies and standards enable more sophisticated methods of data exchange that combine push and pull models with mature public-private governance models. Projects such as [CHORDS](#) and [MDPHNet](#) have created a broad platform with multiple partners and EHR systems to enable both surveillance of a range of conditions and monitoring of the impact of policies and interventions on health status. Both projects have implemented a *federated query model*, a model that may well signal the future of public health surveillance using EHR data.

In a federated query model, the public health agency or any authorized user uses a secure network portal to submit a query on a specific condition (see the *Analyzing Clinical Data and Workflows* section for examples of conditions). That request then goes to each of the participating health care partners, who review and approve the query before their EHR system or clinical repositories run it. After each organization runs the query, they again review and approve the results before releasing them to the original requester.

Importantly, in this model the health care organization maintains control over both access and use. This control enables each health care organization to build and maintain trust with the public health agency that is critical for ongoing data exchange relationships.

This approach can also work with almost any EHR system if the project develops a common data model that enables EHR systems to map local codes to a common nomenclature. When doing this, ideally your project would also rely on existing standards, such as ICD-9 and clinical quality reporting measures, which reduces the reporting burden because the EHR system likely already contains both the data elements and quality reporting scripts and reports.

Federated query models prove valuable when knowledge about a condition being queried is already pretty complete because it supports more complex, deeper queries. However, these models are also useful for conditions where knowledge is scant, and even where the data is incomplete and messy, because the model supports asking the deeper questions necessary to gain clarity.

Clearly, these models require solid governance to succeed. This governance must include a mature governance agreement that highlights shared interests among the exchange participants, while respecting individual business needs and limitations. The agreement could include provisions such as response time, data suppression rules and joint decision making processes. The CHORDS and MDPHNet projects mentioned earlier both began with data exchange partners that already had established relationships with the health department. The health departments then slowly expanded to new partners, building on success and shared learning—a pragmatic approach that you may wish to replicate with your project.

Federated query models also require that data exchange participants have technologies that can support the model and trust agreements. Both CHORDS and MDPHNet use [PopMedNet](#), public domain software developed by Harvard School of Population Medicine that enables such controlled, secure and distributed analyses of health data owned by different organizations.