

infrastructure solutions to common problems. **Results:** We developed a decision tree that guides the developer through the process of developing relevant data partnerships. As a result of our data partnerships, we developed several shared KPMAS data products including a table that identifies voided patient encounters that should be excluded from analysis and a table that flags procedure records that do not represent valid utilization. Working across Kaiser Permanente sites, at least three sites are now using common code to produce VDW data. **Conclusions:** Sharing code and data products within the organization and across Kaiser Permanente sites has reduced the burden of developing the VDW, increased data quality and shared efforts to reduce costs.

Keywords: Technical; Partnership; Virtual Data Warehouse
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CA3-01:

Family History Relationship Data in the VDW

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Background/Aims: Family relationship data in the Scott & White Virtual Data Warehouse (VDW) gathered from multiple sources across the institution is a rich resource that provides an opportunity to study patterns of inherited disease and the ability to evaluate the efficacy of targeted screening strategies. In an integrated healthcare delivery system, linkage of the parent and child (family) electronic health records (EHR) provides an opportunity to improve outcomes by implementing proactive/preventative screening and/or treatment in offspring. Our study focuses on how linkage of the parent/child EHR can be used to identifying youth at risk for a number of autosomal dominant inherited diseases. **Methods:** The comprehensive procedure developed at Scott & White includes gathering relationship information from members at time of enrollment with the Scott & White Health Plan (SWHP). Relationship codes provide the linkage between the family enrollment records and medical data. The relationships are identified by insurance subscribers and covered dependents from SWHP data, and by guarantor and covered dependents from EHR data. This field is then matched against ICD-9 codes for a wide variety of inherited diseases to generate a list of parent-child pairs that can be used to implement early focused screening strategies. **Results:** We were able to evaluate how often offspring were screened for a number of autosomal dominant diseases including familial hypercholesterolemia, hypertrophic obstructive cardiomyopathy, and long QT as well as a number of other inherited diseases. The major problem with this approach is that biological linkage cannot be established (i.e., adoption or step-parent, grandparent may be insured adult). However, this approach provides an opportunity to create flags in the EHR for a first-pass screening that can be enhanced by extraction of additional information (i.e., biological linkage) obtained by a provider during a point-of-care service. **Discussion:** An integrated healthcare delivery system combined with a family-linkage field in the VDW provides an opportunity to improve outcomes for inherited diseases through focused screening potentially involving the use of flags for the healthcare provider. Implementation of early, targeted screenings may improve long-term health outcomes and potentially provide a cost-effective strategy for preventive healthcare.

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CA3-02:

Tools for Quality Multi-site Work with Less Funding

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Background/Aims: Since all of the VDW data has been checked, the data must be consistent and perfect. Unfortunately, this isn't always true. This presentation is designed to introduce project teams and QA work groups to some of the available tools that can be used to efficiently create useful reports

to improve and ensure quality. **Methods:** This presentation will discuss some of the tips and tools that are readily available that help project teams and VDW work groups including the following:

- A standard reporting mechanism to create traffic light (pass/warning/fail) reports across content areas that sites can review and correct before returning to the coordinating center or lead site (or why data check outcome files are cool).
- Designing a system where multi-site reports can be efficiently created, updated and reviewed.
- How CESR QA Macros can help projects
- Describe the VDW Format Library
- Program that creates a report that documents the files in your local data warehouse (including the local variables).

Results: There are many efficient and available tools that improve quality. This presentation gave an update on recent tools the CESR DCC has been working on. Other tools have also been developed by other groups within the HMORN to facilitate HMORN work. **Discussion:** In a tightening funding environment we are all going to need to work more efficiently. These tools give us the opportunity to work better, faster and cheaper.

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CA3-04:

Repurposing the Virtual Data Warehouse as a Reporting Tool

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Background/Aims: The creation and implementation of a research Virtual Data Warehouse (VDW) has shown demonstrable benefits for healthcare researchers. However, the VDW's potential may be diminished to the extent its accessibility is limited outside of the research sphere. The most obvious limitation is in cases where VDW data can only be accessed via statistical software packages (such as SAS) or the use of Structured Query Language (SQL). This may inhibit access to data by interested, authorized parties who lack training in those computer languages. The potential exists for a research site to leverage the VDW into a more open and accessible reporting system, provided that its implementation meets the following criteria: 1) its data is hosted on a relational database management system (RDBMS); 2) its design schema reasonably well adheres to the principles of data normalization; 3) the site implementing the VDW has access to a standardized library of medical terminology that can be used to validate data and display it in a hierarchical manner. The aim is to leverage the existing VDW data model to produce a flexible and easily accessible reporting system. **Methods:** Data from a research site's VDW meeting the above criteria was conformed to the fact/dimension data model pioneered by Ralph Kimball and widely used in the "business intelligence" technology field. Existing VDW subject matters (patients, encounters, diagnoses and procedures) were converted to a fact table format through the creation of views. Hierarchical representations of key attributes (such as diagnosis and procedure codes, date of service and patient location) were extracted from the Metathesaurus of the Unified Medical Language System (UMLS) to populate dimension tables. **Results:** Using the above approach, the research site was able to create a data "cube" with an intuitive interface that facilitates data browsing, navigation of code hierarchy trees, unlimited pivoting of rows and columns, and the ability to view summary measures at various levels of aggregation. **Discussion:** With a modest amount of development and access to medical data libraries, a research site's Virtual Data Warehouse VDW can be leveraged into a user-friendly data resource with modern reporting capabilities.

Keywords: Virtual Data Warehouse; Reporting Tools
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