

Interoperability: More Knowledge or Just More Data?

Investment in interoperability, including the National Health Information Network (NHIN) and locally based Regional Health Information Organizations (RHIOs) is ramping up rapidly. A recent RFP from the Office of the National Coordinator for Health Information Technology (ONCHIT), led by David Brailer, MD, PhD, announced the appropriation of more than \$50 million toward research and demonstration projects in this area.

The acceleration in interest in interoperability began in April 2004 with a call by the president for all Americans to be covered by interoperable electronic health records (EHRs) within 10 years and the appointment of Dr. Brailer as the first national coordinator. A short 90 days later, ONCHIT released the *Decade of Health Information Technology: Delivering Consumer-centric and Information-Rich Health Care*. That strategic planning document outlined four goals:

- Inform clinical practice with use of EHRs.
- Interconnect clinicians so that they can exchange health information using advanced and secure electronic communication.
- Personalize care with consumer-based health records and better information for consumers.
- Improve population health through advances in biosurveillance methods and streamlined collection of data for quality measurement and research.

Interoperability, the cornerstone for development of complete EHRs, permits the exchange of health information among clinicians in a timely manner and under appropriate security protections. Benefits include the availability of medical information to providers irrespective of point of access, redundancy of medical records, reduced repeat testing due to lost or unavailable results or reports, and completeness of medical records as data comes from all points of care.

A recent study by Walker et al. projected almost \$78 billion in annual savings from the use of a full-throttle health interoperability and information exchange. Although savings included benefits from reduced medical tests, it did not include clinical benefits to patients, which are more difficult to measure.

At first blush, the efficient exchange of medical data through interoperability appears to provide tremendous benefits and few drawbacks. Upon further consideration, those benefits may not be so easy to achieve. Variability of data quality, timeliness of data points, differences in clinical vocabulary, and even regional differences in medical terminology present significant obstacles to achieving the true benefits from interoperability.

There is little doubt that with enough research and investment, both in the public and private sector, full interoperability will be achieved. At that point, clinicians will have a complete medical record that includes significantly more clinical data than is currently available in disconnected patient records.

Data Is Not Information

Access to more data does not guarantee access to more information. Availability of most lab values from months or years ago provides little if any valuable patient information. In addition, the quality of the results depends upon the origin of the data, an important element when the data is exchanged.

Consulting reports such as radiology readings or specialist evaluations, written by physicians unknown to the current caregiver may be devalued or even ignored if the "skill level" of the provider is questioned. The variation in medical vocabularies and use of terms, evident even in relatively small geographic areas, may cause levels of miscommunication and improper interpretation of data and results.

The quality of medical care does not suffer from the lack of patient data but

rather from the lack of patient information. Clinicians struggle to interpret the avalanche of patient data, searching for kernels of relevant information. Interoperability will only add to the crush of data. Although interoperability does provide value when it offers current diagnoses, current medications, allergies, and past medical history, delivering all of a patient's data from multiple points of care will do little to help clinicians unless some "expert system" delivers the small number of knowledge-filled data points to the attention of the treating clinician. Otherwise, the additional data will be lost in the overwhelming amount of patient data already available.

An accessible, comprehensive, and useable personal health record will deliver higher quality, safer, and more efficient healthcare. Interoperability is just one tool that can help us achieve that objective. Further research, debate, and consensus is needed to identify what constitutes valuable patient information in a personal health record, how that data can be identified electronically, and how it should be presented to a treating clinician. ⚠

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REFERENCE

Walker, J., Pan, E., Johnston, D., Adler-Milstein, J., Bates, D. W., & Middleton, B. (2005, January 19). The value of health care information exchange and interoperability. *Health Affairs* 24(Supplement 1), W5-10-W5-8.