Innovative Uses of Technologies to Meet Healthcare Data Challenges: an Academic Medical Center's Perspective

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BACKGROUND

The HIV Care Continuum requires a multidisciplinary approach to achieve clinical outcomes that help control HIV disease progression. Multidisciplinary teams must include physicians, nurses, MAs, social workers, and data analytics experts. Complex data systems, integrated technologies, and data retrieval limitations challenge the ability of healthcare organizations to:

- Track progress of healthcare outcomes
- Properly initiate quality initiatives to improve efficiency
- Generate performance measures to access programs
- Create accurate reporting for different program management
- Perform HIV care research, and support different research mechanisms

This presentation demonstrates how carefully planned integrated information systems, built around an existing Electronic Health Records (EHRs), can achieve the above goals.

METHODS

The Ryan White-funded Miriam Hospital Immunology Center (MIC) is part of an academic medical system that has more than 15,000 employees, 4 hospitals, and a well-established Information System (IS) Department. The IS department manages organization's Electronic Health Records (EHR) system across all Lifespan (LS) hospitals. To best utilize this complex administrative and technical system to fit the needs of a comprehensive Ryan White program, we developed a robust HIV-specific Informatics system (ICDB), centered around the system-wide EHR. The ICDB was created in 2003 on a SQL server managed and maintained by the LS-IS department and is accessible via LS Intranet. All user interfaces are created for specific uses. The Epic data is imported into this system quarterly. To meet RW CLD and other reporting requirements, the additional data items collection tools were added into Epic frontend; 1) HIV Flowsheet to capture support services and other data items, 2) Smart Phrases to capture visit-level screenings the MDs. The system is continuously enhanced and expanded according to changing technical, administrative, and reporting requirements of our HIV program.

SYSTEM DIAGRAMS

Figure1: The MIC Informatics System with EPIC

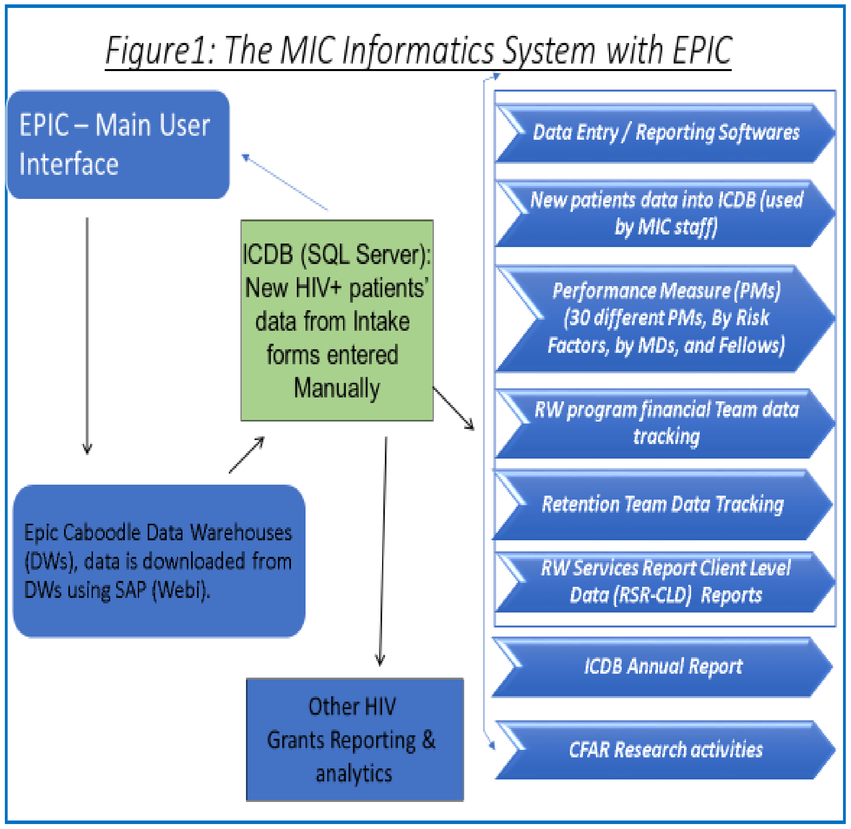


Figure 2: CLD reporting with TRAX

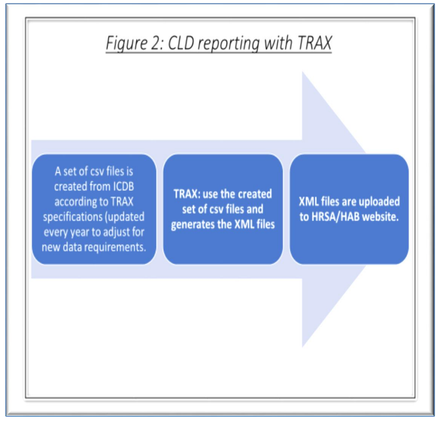
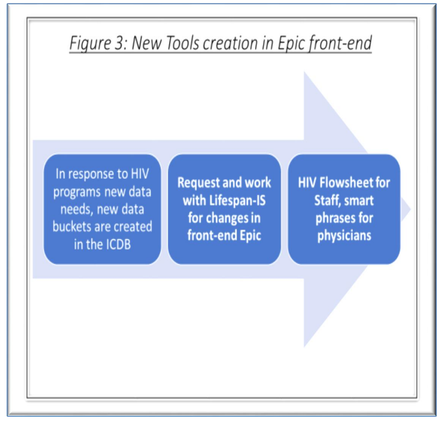


Figure 3: New Tools creation in Epic front-end



RESULTS

The ICDB system is an example of how carefully planned data systems built around existing health IT infrastructure provides evidence of best practices, gives feedback to the healthcare system in the form of performance measures, and advances us closer to realizing the vision of a learning health care system. In summary, the current system is being used for:

- **RW-RSR-CLD reporting**: timely submissions since 2010
- **RW Program management reports**: Annuals and biannual
- **Annual PMs report**: 32 PMs report (overall, by MDs, by ID Fellows etc.) from last 10 years.
- **Quality Improvement (QI) initiatives**: More than 15 new QI projects were designed because of the analytics support from this system
- **Research grant mechanisms including NIH and ACTG**: More than 20 new grant applications supported
- **Research activities**: Over 300 data requests served

CONCLUSIONS

Careful planning and collaborative efforts across different programs in any institution can generate healthcare informatics solutions that can be used to provide the best HIV care. In future, we aim to develop more interactive linkages between the ICDB and Epic system to support clinic's quality improvements and retention efforts to achieve the national goals of best performance around HIV care.

ACKNOWLEDGEMENTS

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