

Background

In October 2011, the CDC announced STD*MIS development discontinuation of the Sexually Transmitted Disease Management Information Systems (STD*MIS). This required the remaining 5-8 jurisdictions still using STD*MIS to initiate planning for alternative data management solutions. These remaining sites are preparing for transition to vendor-based products or custom-built applications for respective STD surveillance activities.

Originally launched in the mid-1990's, the current STD*MIS v4.1 application has a variety of limitations, including outdated technology, limited navigability, lack of electronic laboratory reporting (ELR) infrastructure and inadequate access controls. The Virginia Department of Health (VDH)- Division of Disease Prevention (DDP) has used STD*MIS for STD morbidity and STD/HIV field operations (i.e. patient/partner follow-up interviews) since the inception of STD*MIS. VDH also uses Centers for Disease Control and Prevention (CDC) applications for HIV Surveillance (eHARS-electronic HIV/AIDS Reporting System), as well as TB and Hepatitis C (NEDSS/VEDSS). The CDC's vendorbased application, EvaluationWeb, is used for HIV testing/prevention, as well as Hepatitis C testing. Virginia currently maintains custom applications for sentinel STD surveillance (SSuN), HIV Care services (ADAP and VACRS) and ELR validation activities (Figure 1).

The need for additional data management interoperability within the various DDP work units has increased over the past 3-5 years. Hence, the immediate need for a STD surveillance database replacement provided an opportunity to assess larger-scale data management operations as a means of increasing cross-program connectedness.

Objectives

1. Replace an outdated legacy STD application with a robust solution, based on current technology.

- 2. Improve overall data management capacity and stewardship, including STD access control mechanisms.
- 3. Improve local health department STD surveillance systems access and use.
- 4. Provide for a paperless STD surveillance system.
- 5. Improve STD/HIV/TB/HCV public health system integration for surveillance and care service delivery.



Figure 1: MAVEN Implementation Timeline for Virginia



Projects of National Significance grant.

Connect (Four) More: Virginia's Strategic "Game" of Interoperability

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Project Description

The DDP determined the MAVEN application was the best fit for Virginia. This decision was reached after review of existing programmatic needs, available vendor-based products and review of a CDC assessment of existing market analyses conducted in 2012. This determination included assessment of STD*MIS replacement requirements, the DDP's desire to increase programmatic interoperability between STD/HIV/TB/HCV, local health department data system accessibility and HL7 infrastructure for ELR messaging. MAVEN, from Consilience Software, was the only commercial-off-the-shelf (COTS) system capable of all of the above requirements, without large-scale programming and build-out effort.

Virginia's specific functional requirements for a new interoperability system included: 1) an integrated STD and HIV data module with case management capacity (patient/partner follow-up interviews); 2) a tuberculosis data module; 3) a hepatitis data module; 4) a refugee/immigrant health data module; 5) export functionality to eHARS; 6) user role flexibility for sharing of data between all aforementioned programs; 7) ELR infrastructure for receipt, storage, review and importation; and 8) a common database infrastructure for automated interstate data sharing among neighboring cities/states for public health surveillance purposes (i.e. North Carolina and Washington, D.C.).

Data integration across the spectrum of DDP programs is an absolute necessity in order to enhance programmatic linkages, assessments and quality assurance. New grants that focus on data linkages have been awarded to DDP and the changing healthcare landscape is placing quality assurance activities at the forefront of programmatic evaluation.

The DDP initiated Project Management kickoff for implementation of its new MAVEN interoperability system in October 2013 (Figure 2).

Methods

DDP worked collaboratively with the VDH Office of Information Management and Health IT (OIM) to hire a contractual Project Manager and develop project documentation. Multiple meetings were conducted with staff from the Virginia Information Technologies Agency (VITA) in order to ensure appropriate documentation requirements and to establish MAVEN as a Tier 4 project. Project approval was received from the VITA Chief Information Officer on May 15, 2013. An Applied Public Health Informatics Fellow was awarded to Virginia in June 2013 for a one-year assignment.

The initial MAVEN procurement included licenses for STD/HIV surveillance, TB surveillance, and HIV care services. Staff from the STD Surveillance, Operations & Data Administration (SODA) program collaborated with various DDP program areas to participate in cost sharing activities. Funding categories involved in MAVEN procurement included the following CDC cooperative agreements: 1) Comprehensive STD Prevention Systems (CSPS); 2) HIV Prevention; 3) TB Control and Prevention. Funding was allocated from a Health Resources and Services Administration (HRSA) Special Project of National Significance (SPNS) grant, as well as Virginia state funds (Figure 4). Given the primary purpose of legacy database conversion and replacement of STD*MIS, a large portion of initial procurement costs were allocated to CSPS carry forward funds.

Initial project activities associated with MAVEN implementation included the following: 1)eHARS system integration; 2) Administrator training; 3) MAVEN v5.0 module licenses for STD/HIV, TB, Hepatitis and HIV care services; 4) STD*MIS legacy database conversion; 5) ELR interface; and 6) 3 weeks go-live support. DDP decided to switch eHARS system integration with STD and HIV modeling post procurement, in order to ensure modeling was performed correctly. This decision was made based on modeling needs and inherent changes to MAVEN v5.0 which made it easier for inhouse SQL data management staff to perform the eHARS system integration processes.

Procurement of application and database servers was initiated August 2013 with Northup Grumman Corporation, which oversees network and desktop IT operations for the Commonwealth of Virginia (Figure 3).



Figure 3: Division of Disease Prevention Servers

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Figure 4: Initial MAVEN Cost Sharing Allocations



CSPS: Comprehensive STD Prevention Systems Cooperative Agreement (CI **SPNS:** Special Projects of National Significance grant (HRSA) **TB:** Tuberculosis Control and Prevention Cooperative Agreement (CDC)

Figure 5: <u>Redirected MAVEN Cost Sharing</u> Allocations



HIV Prevention: HIV Prevention Cooperative Agreement (CDC) State Funds: General funds from Virginia for program operations **AAPPS:** Assessment, Assurance, Policy Development and Prevention Services (CDC)

Results

. Consilience software staff worked with DDP to develop a timeline for MAVEN Project Management. The initial Kick-Off meeting was held October 24, 2013.

. Although there was a preliminary agreement related to funding allocations, procurement lag time and other unforeseen grant-related circumstances resulted in the redirection of some previously dedicated funding sources (Figure 5).

Business process modeling for STD and HIV have occurred at separate intervals. To date, this process is a few weeks behind schedule, due largely to the availability of staff for dedicated effort. STD modeling is nearing completion, while HIV modeling will be completed by early May 2014.

. Use of vendor staff to conduct initial modeling was necessary, resulting in a change to the initial vendor services pro-

Conclusions

An integrated approach to STD*MIS system replacement and cross-unit integration should provide greater operational efficiency across multiple DDP programs. DDP will evaluate such activities as each phase of the project is initiated. Upon completion, DDP should benefit from a cohesive system capable of improved co-morbidity identification, improved monitoring of collective disease trends, improved analysis and reporting capacity; system accessibility by local health department staff; and increased security con-

Key findings to date include the following:

• Programs considering a new surveillance system should evaluate all available options and determine if other programs with similar functions (i.e. HIV/TB/Hepatitis) could benefit from inclusion in the project scope.

• DDP's cross-programmatic approach has resulted in collaborative business process modeling, program integration decision points, and project cost sharing.

• DDP staff will be actively engaged with other program areas to ensure relevant ongoing maintenance costs are incorporated into specific program area budgets.



HL7 Segments

OBX Observation/Result SPM Specimen PID Patient Identification PV1 Patient Visit OBR Observation Request NTE Notes and Comments ORC Common Order Segment MSH Message Header NK1 Next of Kin/Associated Parties SFT Software Segment

TQ1 Timing Quantity