

**Division of Sexually Transmitted Disease Prevention
Business Process Management Modeling Initiative**

**Change Management Analysis
For Adoption of Leading Practice Business Processes for STD Prevention**

SUB TASK 4

**Supplement to
Deliverables 4C and D**

**CONTRACT
GS-10F-0087N**



Change Management Analysis For Adoption of Leading Practice Business Processes for STD Prevention

Background

The Division of STD Prevention (DSTDP), along with a sample of CDC funded grantees, is conducting a business process modeling initiative to create a common, but flexible, best practice model for STD Prevention. The business process management model (BPMM) is being conducted in tandem with the development of the National Electronic Disease Surveillance System (NEDSS) and the STD Program Area Module (STD PAM), to ensure that the integrated disease surveillance and investigation system supports identified leading practices.

The leading practice business processes, as identified by BPMM participants, were illustrated in a paper and accompanying process flows, in May 2004. The document below is a discussion of the change management considerations for STD Prevention departments within CDC funded grantee organizations as they adopt the leading practices and integrated disease surveillance and investigation applications. Both documents are resultant of six months of interviews, site visits, facilitated sessions and discussions with staff with the Division of STD Prevention, state health departments, local health departments and external partners. Ultimately, these materials will inform the development of the STD Program Area Model (PAM) and be used to identify implementation support requirements. The information presented here will be further detailed in supplemental materials to be completed in late 2004.

Leading Practice Business Processes

The full description of leading practices for STD prevention is contained in deliverables 4c and 4d and available for review. The document illustrates the future state for STD Prevention and explains gaps between current and future state. Stakeholders also described how their leading practices would be supported by an integrated disease surveillance and investigation system and outlined the technology gaps between their needs and the current development of the NBS, and planned development for the STD PAM. Understanding the leading practices and the scope of the gaps is necessary for full comprehension of the change management discussion below.

Description of Change Management

While the process flows and functional requirements illustrate the leading practice business processes STD prevention, the goal of this paper is to help project areas and the CDC identify *how* to successfully implement a leading practice model for STD Prevention. Experience has shown that even the best technology applications cannot be successfully implemented without consideration of the 'people' components. Successful implementation must address processes and behaviors. These considerations are defined as "change management" in this paper. Implementation must include building a culture that incents staff members and partners to adopt the new roles and responsibilities that lead to the desired outcomes.

With the adoption of NEDSS and the STD PAM, such change management issues are particularly pertinent since grantees and physicians cannot be forced to use the system, but instead must voluntarily adopt new processes and technology. Therefore, it is vital that the CDC and the project areas carefully consider the components of change management and incorporate the practices into any implementation plan. Inadequate

attention to change management can lead to a reversion to manual processes, rework, duplication of efforts, and in the worst case scenario, an outright lack of use of the system.

Implementation of both processes and technology require a host of success factors. Below is an outline of key success factors often considered throughout the planning, adoption and operation of change:

- Powerful business case for change
- Clear and compelling vision
- Leadership alignment and accountability, including adequate resource allocation
- Effective communication
- Stakeholder confidence and commitment
- Increased change capabilities, including knowledge transfer and staff development
- Integrated project management, defined by coordinated activities under a single project management infrastructure
- Aligned human resources processes, such as measurement of and reward for implementing desired behaviors and creating desired outcomes

As participants envisioned their own success during a two-day facilitated session, they derived a similar outline of success factors, and began to identify specific needs within these eight categories. As CDC and grantees conduct implementation planning, it is essential that they revisit this outline, using it as check list to help identify specific requirements to be included and addressed during implementation.

Introduction to Change Management for STD Prevention

The change management analysis below considers the eight success factors above, as they are pertinent, through a discussion of the organizational culture, organizational structure and the staff roles and roles and responsibilities necessary for adopting leading practices. Typically, organizations must institute a culture or philosophy that facilitates the outcomes they desire. This culture is then supported by leadership through the structure of the organization and the newly defined roles and responsibilities. For example, there must be desire to change (a culture that provides incentive and trust in outcomes), a mechanism for change (an organizational design that supports new processes) and accountability for change (roles and responsibilities that are measured, resulting in rewards for outcomes). Considering and ensuring the eight success factors will allow the organization to build the culture, organizational design and roles and responsibilities necessary for successful implementation and operation. These eight success factors will be revisited through implementation planning.

Change Management for STD Prevention

Consideration of these success factors and an active change management program will be essential for grantees looking to adopt the NBS/STD PAM, or another integrated surveillance system. Without change management activities, behaviors and incentives are misaligned with programmatic goals and stakeholders may not accept new projects, technologies or responsibilities. For the PAM implementation organizational culture will be paramount. If staff members are not properly prepared for the new technology and its accompanying process changes they may revert to using stand-alone, ad-hoc data bases, if possible.

An integrated surveillance system inherently requires a collaborative culture. Although local health department staff may act more autonomously (e.g. enter their own information) all participants will be wholly reliant on one another (local health department staff cannot benefit unless state health department staff maintain the application, triage the data, etc. State staff cannot benefit unless local health department staff enter and update case information, etc.)

Therefore, participants cite a need to develop a culture of collaboration between state and local health departments, with the CDC and with external partners. They intend to support this by creating an organizational design that facilitates accountability and by redefining the roles and responsibilities of staff and partners to ensure that activities are aligned to the goals of the organization.

Outline:

While the eight success factors discussed above are paramount to success, they are broad in nature. The text below incorporates the success factors into a more specific discussion of organizational culture, organizational design and roles and responsibilities, within the specific context of STD prevention. Definitions are provided immediately below, along with an outline of the sub topics addressed.

Organizational Structure: The discussion of organizational structure identifies who will be accountable for STD Prevention activities, how staff members will be structured within the health department and to what degree will STD services be centralized within state and local health departments. It also examines how technology needs will be supported across disease areas and health departments and how the CDC will support the changing organizational structure of project areas. The chapters on organizational structure include:

- *Structure of state and local health departments*
- *Structure of the CDC in supporting project areas*

Roles and Responsibilities: The discussion of roles and responsibilities examines what will be expected of health department staff members and external partners, how their roles will shift and how they will be supported as they adapt to their new roles. Chapters on roles and responsibilities include:

- *Responsibilities of state and local health department staff*
- *Responsibilities of providers and labs*
- *Responsibilities of the CDC*

Organizational Culture: The discussion of organizational culture within this analysis illustrates how staff members interact with one another and the relationship between the CDC, the state health department and the local health departments. Essentially, the discussion examines what philosophies must be developed within the health departments (e.g. are they autonomous, independent or collaborative) and how people are rewarded, measured and incented. The analysis of culture also examines requirements for leadership to promote changes such as communications and resource allocations. The chapters addressed in the section on culture include:

- *Relationship between CDC and project areas*
- *Relationship between project areas*
- *Relationship between state and local health departments*

Organizational Structure

Structure of State and Local Health Departments

Representatives from state and local health departments were encouraged to consider new organizational structures to support integrated prevention activities, potentially combining disease areas, centralizing surveillance activities or centralizing technology support. There are two distinct models that grantees can employ: 1) Separate disease area departments, with a coordinating body across departments and 2) A unified IT/Surveillance department with specialized disease specific staff, as necessary for investigation. Projects may also chose some variation of one of these models, such as combined HIV/STD with other disease areas separate, or centralized IT support with separate disease area departments.

Leading Practice

Although each state health department has different needs and abilities, participants were asked to describe their ideas on the best organizational structure to accommodate integrated surveillance activities in their state. Those interviewed do not envision a vastly different organizational structure than they currently employ. They suggest maintaining current structures and developing advisory committees comprised of all departments to support implementation of NEDSS and accompanying process changes. They state that coordination between HIV, TB and STD should not be difficult since they are all housed within the Division of Communicable Diseases in most state and local health departments.

Some grantees do cite the need for combined STD/HIV departments, as activities inherently overlap and populations are similar. At a minimum, they cite the need for cross trained staff and integrated analysis. Since many grantees already have combined HIV/STD departments, they can provide a model for other grantees, demonstrating how staff members perform both functions, how programmatic decisions are made and how resources are allocated.

Other structural issues explored pertain mainly to technology support. Projects believe that the future of IT support is fairly centralized, since each department will no longer have their own application. In the past, each disease area has had some support specific to their own application (e.g. STD*MIS, HARS, TIMS, etc), and each local health department has had some support for their own systems, since they are housed locally. However, support should now be shared since a uniform system will be used across disease areas. Moreover, since the system will be housed centrally, the necessity of localized IT staff to support the system will somewhat diminish. Local health departments will require some staff to help with immediate user issues (e.g. locally defined fields, log-ons, etc), but all changes to both hardware and software will most likely be conducted centrally.

Gap

Grantees recognize that buy-in and input from all involved parties is necessary for design and implementation as is commitment from leadership, to develop accountability. However, they have voiced a preference for maintaining separate disease areas and building collaborative bodies to coordinate activities, as this option requires less

disruption to their work and allows for specialized staff within disease areas. It should be noted that this model is easier to implement, but more difficult to operate. Differing interests and programmatic needs will inherently result in barriers to creating consistency in definitions and processes. Staff will be primarily accountable to their disease specific work, as opposed to the greater programmatic work of the organization.

A case study from the Massachusetts Department of Health exemplifies the complexity of the issue. The MA Bureau of Communicable Disease Control recently hired an external contractor (DBM Solutions, LLC) to make recommendations on organizational redesign in conjunction with the implementation of an integrated system. At that time, the Bureau was structured into a Division of Epidemiology, a Division of STD Prevention and HIV/AIDS Surveillance, a Refugee and Immigrant Health Program and a Division of TB Prevention and Control. The Divisions generally operated separately, with some employing local health departments for investigation, and others operating with a more centralized model. They used separate applications for data tracking, and conducted most of their data analysis independent of other Divisions.

The contractor suggested creating a Surveillance and Informatics Office to: “provide IT/Surveillance program management for new initiatives and existing projects, coordinate all data exchanges, manage all data collection, perform limited case management as defined in the charter or on an as needed basis and act as the catalyst body to define areas for process improvement regarding the collection of data and data standardization within the bureau.” The contractor noted that the Bureau could continue with its current organizational structure, allocating responsibility for standardization of data elements, data collection processes and investigation to the respective departments. However, this was not recommended, as,

“Formal and informal lines of communication between programs already exist and new initiatives that touch all programs are underway, but there is not sufficient coordination and cooperation between programs to fully standardize data collection. This option does not begin to address the disparity between programs in data collection and data entry and IT resources.

As a note, there is a great assumption made about the effectiveness of a task force in making optimal use of “borrowed” resources from programs. It is very difficult to motivate and utilize resources to perform additional work when that work competes with other priorities set by staff’s direct management”.

MA has heeded the suggestion of the contractor, creating a centralized branch to receive, document and allocate all lab and case reports. A liaison from each programmatic area is being allocated to the central group to facilitate disease specific requirements. Although centralized surveillance provides benefits, programmatic areas are concerned that centralized staff will have difficulty processing all incoming reports, since many will continue to be received on paper, and will not have adequate knowledge to recognize and triage high priority cases. In addition, since NBS does not currently have a case management component, it appears that NBS and STD*MIS may have to be used in concert, with potential double entry. Due to the complexity of both the implementation and the operations, communication, planning and collaboration will be vital to avoid re-work and ensure consistency of prevention activities.

Tennessee has chosen the other option for their NEDSS implementation, an advisory committee of programmatic area representatives, with staff remaining dedicated to their

disease specific work and combined STD/HIV departments. Implementation of this structure requires revised incentives and metrics. Health department leadership must prioritize collaborative work, making department staff accountable for standardization and centralized strategy, and measure department staff for these activities. It should be noted that some modified version of these organizational designs may be constructed as well, such as combined HIV/STD or/and some centralized surveillance staff.

Refining state organizational structures is not currently part of the national NEDSS initiative. Therefore, grantees face this challenge independently. DSTDP can support projects during implementation, but organizational redesign involves all departments within state and local health departments, out of the scope of this initiative. There is significant risk that an ad-hoc restructuring, or a lack of restructuring, could challenge the success of the initiative as staff will perceive their roles changing without sufficient direction, and the allocation of required centralized tasks will be missed. DSTDP can promote organizational planning by collaborating with other Divisions within the CDC and disseminating information about organizational design considerations and experiences. STD prevention staff in state health departments can promote integration by taking a leadership role in NEDSS planning efforts and implementation efforts within their state. Although such efforts will require resources, they will help ensure that STD departments are integral in decision making around organizational structure, staffing and operations.

Organizational structure of the CDC in supporting grantees

As grantees prepare for the integration necessary to implement one surveillance system across programmatic areas, they look to the CDC to support them in their changes. At present, funding and technical assistance are allocated by disease area. NBS deployment is also supported by a separate group within the CDC (IRMO/OD) and the development contractors. Projects and local health departments were encouraged to consider how the CDC could best support them, as they migrate to new responsibilities with more integration of their work.

Leading Practice

Traditionally, the organizational structure of state health departments follows that of the CDC. Therefore, external participants had not fully considered the best structure for the CDC. However, grantees request an organizational structure that promotes collaboration, and cite that their work will be best supported by a congruent structure at the national level. Grantees are examining combining some disease areas and integrating technology and surveillance staff. As discussed above, projects appear most concerned about HIV and STD integration. However, only some participants suggested combining these departments at the CDC, while others suggested separate departments with better coordination, in order to ensure that STD activities do not become overshadowed by HIV activities. Also discussed was STD's integration with Hepatitis and Tuberculosis efforts. Some participants cited that STD staff members were conducting Hepatitis A activities, particularly because Hepatitis A does not have dedicated staff, infected populations are related, and prevention activities are often similar. Although there were many references to coordinating with TB efforts, there was not significant discussion during the session or in interviews about merging STD and TB staff or activities.

Since the STD PAM has not been developed, participants, both internal and external, are not fully clear as to what CDC technology support will be available, how it should be structured at the CDC and how it can be coordinated with the HIV and TB PAMs. The Futures initiative creates a National Center for Public Health Informatics, which will oversee the development and implementation of all CDC applications, such as NEDSS and the PAMs. Internal and external staff interviewed believe that programmatic areas will continue to support legacy systems (STD*MIS) during the transition, and will then support the operations of the PAMs, once they are implemented. How the two groups will interact is not yet clear.

Gap

State organizational structures mirror those of the CDC and the funding vehicles. Therefore, the states that have combined disease areas to facilitate their investigation and outreach activities struggle to provide the required metrics and progress reporting and identify clear funding allocations, since staff and programmatic activities often overlap. Although significant changes in the CDC's structure were not discussed, participants did focus on the need for joint support for STD and HIV services.

Combining disease areas, or coordinating activities between disease areas at the CDC level, may help grantees prepare for integrated activities (e.g. one project officer for HIV and STD), but would require significant re-organization. The new Futures initiative integrates all infectious disease departments within one Coordinating Center, potentially encouraging better collaboration and potentially indicating some movement toward combined funding. However, no changes in the structure of programmatic support at the CDC have been formally communicated. As grantees become more integrated, a lack of collaboration within CDC entities will increasingly hinder project areas as progress reporting, financial monitoring and grant submissions may become more tedious and time consuming.

Coordination between the programmatic areas and the technology divisions at the CDC and the NBS/STD PAM developers is critical to the success of implementation and ongoing operation, since DSTDP staff provide critical information for development and support end users. However, it appears that the relationship and communication with DSTDP staff has not yet been fully developed through the current organizational structure, as DSTDP staff are not yet certain of their roles going forward, or their mechanisms for coordinating with IRMO and the contractors. Coordination will still be necessary in the new organizational structure, since the Informatics Center will develop and implement the STD PAM, and will provide the education to DSTDP staff required to support grantees in the future.

The impact of organizational design decisions made at the CDC on the state and local health departments is important to note. Such decisions affect funding, support, metrics, requirements and programmatic emphasis. Moreover, the pace at which the CDC adopts change will have large impact as well. Projects will be hesitant to adopt leading practices that require organizational change until they understand the changes to take place at the CDC and the effects that those changes will have on project areas.

Roles and Responsibilities

Responsibilities of State and Local Health Department Staff

State and local health department representatives were asked to consider how their role would change once they adopted leading practices that included electronic communication with physicians and labs, and an integrated system between state and local health departments. They were asked to illustrate new tasks, responsibilities and skills required to migrate to an on-line reporting system. In addition, they considered various types of health departments, those that are centralized, with entry and analysis currently taking place at the state, and those that are already decentralized, with entry taking place on site at local health departments.

Leading Practice

With an integrated surveillance system, case data from labs and providers will be sent to the central repository. Cases will then be pushed to appropriate local health department staff for follow-up (presuming local health departments conduct case investigation). Local health departments will conduct follow-up, and enter information via browser entry. To achieve this, roles will change for both state and local health department staff. States will have increased responsibility to QA information, since reports lacking necessary information cannot be routed to the correct local health department. States will be responsible for conducting quality assurance on the information input by local health departments, as there is likely to be duplication, errors, etc. Local health department staff will be responsible for entering information on-line. Local health department staff will also have access to their own data and reports, placing responsibility on them to conduct analysis and improve programs independently. Local health departments will look to the state staff for training, communications and materials, to ensure that leading practices are implemented. State and local health departments will define who will follow up with providers and labs to ensure reporting and quality assurance on required fields.

Clinical guidelines, prevalence data and clinical information will now be accessible for health department staff. CDC and state health departments will provide guidance on how data should be recorded and used. Local health departments will receive adequate information to maintain uniform processes and data definitions. The role of local health departments in extracting data and generating reports will vary based on local capabilities. In some cases local health departments will conduct their own analysis. In other cases, smaller local health departments will look to the state for support.

Gap

Stakeholders are cognizant that the roles of the local health department staff will change considerably with an integrated system for disease reporting and investigation, with local health departments now responsible for entering information directly into the system. However, the concerns cited most often were about the standardization of data elements across local health departments. Representatives from fairly autonomous local health departments cite that the benefits of standardizing, and the ability to compare information across health departments, will have to outweigh the difficulty of changing data elements definitions and the ability to analyze longitudinal data.

Moreover, access to information does not ensure that it is useful or used to its fullest extent. Staff will have to incorporate this information into their daily activities. It is still somewhat unclear to stakeholders how they will use more clinical and external information in their daily work. It is likely that this will be learned over time, as benefits are realized.

The transition to a centralized system will be complex, as it is likely that electronic information will be received in the centralized integrated system, but manual information will still be received by local health departments in the form of faxes, mail and phone calls. All of the various forms of information will have to be reconciled. It is likely that duplicate processes, manual and electronic, will need to be run simultaneously for a period of time.

Participants did not cite significant concern about the state controlling the security or conducting the QA and de-duplication of all data. However, this may emerge as an issue during implementation. NBS security and access to data is managed centrally, by the state. Some states have hundreds of local health departments and the security for all staff needs to be overseen, updated and monitored. Moreover, at present, there are some pre-defined reports accessible to users, but there is not a robust set, and there is limited ability to produce menu driven ad-hoc reports within the system. Therefore, local health departments will be heavily reliant on the state for data sets, analysis, interpretation and access to case reports.

In order to increase the role of local health departments in electronic reporting and investigation, staff must realize benefits of the transition. Local health departments are clearly looking forward to accessing their own data and conducting their own analysis. However, representatives from local health departments cite that recording information in the STD PAM will require additional resources. They express that without more resources existing staff may fall behind in case investigation. Yet, it was also noted that many states successfully made a similar transition during the implementation of STD*MIS, with investigation staff now conducting investigation activities and entering their cases into the application.

For local health departments already using electronic applications their role will change less. Benefits should be more immediate, as the NBS/PAMs will allow for coordinated entry. Since staff often re-key data in various separate applications (STD*MIS, HARS, Registries, etc) the transition should streamline their work. However, limitations on Analysis Visualization and Reporting (AVR) may frustrate local health departments who presently have control of their data. They may feel like they are losing convenience if they are reliant on the state to make data available, or if they cannot run reports directly from the system in early version of NBS (the initial limitations on AVR are expected to be resolved as multiple states contribute solutions that can be shared among NBS states). Moreover, local health departments may have to concede control over their legacy data, so that it can be incorporated into the new state repository.

In order for local health departments to realize benefits, comprehensive AVR capability must be developed. Grantees interviewed cite that the ability to view their own data, run a full set of menu driven reports and run ad-hoc reports is paramount. While state health departments are likely to have the ability to export data into separate applications

(SAS/SPSS) for analysis, fewer local health departments will have this capability. The transition to centralized data store, without access for local health departments will confound implementation and frustrate staff.

Responsibilities of Providers and Labs

Projects and local health department representatives have control over changes in their own activities, but success of leading practices is reliant on labs and providers to participate by entering information on-line. Stakeholders were asked to consider how they can incorporate providers into the process and what incentives would be necessary to promote screening, reporting and adherence to guidelines and how they can help providers adopt the system.

Leading Practice

Ideally, clinical information from providers will feed the electronic disease reporting and investigation system, with a standard set of clinical data. Information will pull from clinical systems directly to the reporting system, or providers will report on line, entering the information in a browser based system. Lab information should be uploaded via interface/messaging.

Ideally all providers would be required and incented to report electronically. They should be given access to their reporting data and clinical follow-up guidelines through the system. Reports on morbidity, segmented by demographic (e.g. gender, age, etc.) should be pushed back to the provider on a regular basis. Moreover, improved communication and emphasis on partnerships with providers will result in incentive. As state and local health department staff increase contact with private physicians, providing education and training on screening, reporting and follow-up guidelines and monitoring outcomes, physicians and nurses will recognize the benefits of improved surveillance activities.

Gap

Integration with labs will require resources and skills from both projects and labs to build the messaging component. As this development occurs with technology staff at the state level, not within the STD Division, STD staff will have little control over this integration. However, states piloting the NBS stated concern about their technical skills and ability to create integration with larger labs. Moreover, STD represents the majority of cases reported, and has unique lab results. Therefore, it is critical that the lab requirements identified in the STD functional requirements, and the STD use cases, are developed and validated in the field. STD staff must also participate in monitoring in the lab reporting component to ensure that lab results are complete and accurate.

Moreover, integration with labs provides an opportunity to increase prevalence monitoring activities. Monitoring programs could be supported through the NBS/STD PAM, as labs can theoretically send unidentified positive and negative results. However, it should be noted that projects cite concern over legislative and privacy regulations pertaining to the transmission of negative lab data.

It is unlikely that legislation requiring electronic reporting will be implemented and enforced in most states. Although current legislation requires providers to report cases

in most states, they often do not and face few repercussions for lack of compliance. Therefore, providers must be incented to use the system, through other means, such as increased report availability. DSTDP could facilitate compliance and monitoring activities by providing guidance to states on increasing provider participation, with examples of activities, communications and materials. DSTDP could also potentially conduct studies about the effectiveness of these activities on reporting and screening compliance, to incent states to adopt such programs.

Even Pennsylvania, who has implemented legislation requiring electronic lab and provider reporting, states that the best method for engaging providers has been providing them with increased information via the system. Louisiana has also implemented a reporting system for providers. Although not primarily used for STD reporting, it is used by physicians for reporting of other infectious diseases. Staff members have spent significant time and resources training physicians, providing materials and working with providers to encourage use of the electronic system. Physicians are incented to use the system because it gives them access to their own cases. They can view, update and enter cases directly. Louisiana has delayed adoption of the NBS until the functionality that exists in their current system is available, so that benefits to providers can be maintained. Adoption will be a slow process, requiring staff to conduct training and communication, and develop the functionality that gives providers reason to use the system. It should be noted that there are no immediate plans to give providers access to clinical guidelines through NBS or to give providers access to their own cases in NBS, which may be required for greater acceptance and use.

Responsibilities of CDC Divisions and Staff

As the roles of project area staff change, so should the roles of the CDC in supporting their work. Whereas the CDC has provided support through the programmatic divisions in the past (e.g. a branch within DSTDP supports STD*MIS for state health departments), the roles of division staff in supporting an integrated system have not yet been communicated. Internal and external participants were asked to consider how to best provide support to grantees, and allocate roles to provide accountability for that support.

Leading Practice

Ideally, the role of the CDC will continue to be both operational and technical. Since it is unlikely that one group could support both needs (e.g. technology development and surveillance operations), some responsibilities will reside in the new Informatics Center, and some responsibilities will reside in the programmatic divisions. Staff at the new Informatics Center will support projects through planning, implementation and operation of the NBS and the PAMs. They will provide the necessary communications and training as well as the technical support needed (e.g. build the application, conduct technical assessments for deployment, deploy the application, address bugs, create system enhancements, etc). The Center will be responsible for supporting each subsequent release.

Operational roles will reside in the programmatic areas, with Division staff continuing to field calls from projects and provide technical assistance on analysis and system

functions (e.g. creating surveillance reports, building alerts on out of range data, implementing outbreak messaging functions, etc.) However, this will require significant coordination between the new Informatics Center and the programmatic divisions in order to allow for a single 'triage' entry point and ensure follow-up for both technology and operations inquiries.

Gap

The CDC and external staff members interviewed appear to have a fairly concrete idea as to how roles will be defined between the Information Center and the Divisions, and all recommend a centralized call-in number, to field all requests. However, only those involved in STD activities were interviewed. Therefore, roles will need to be adequately documented and communicated to ensure that the centralized staff members receiving requests understand how to allocate calls. There will need to be detailed protocols of who receives what requests. Moreover, because there will now be a triage layer for all requests, time requirements for follow-up and the monitoring of request allocation accuracy will be vital.

In addition, although some mechanisms have been created to field user comments and questions and development requests, they are currently limited to IRMO and the developing contractor, since the STD PAM has not been implemented. Tools will have to be rolled out to programmatic divisions, so that they can review and respond to user needs. Staff will have to use the centralized tools, such as message boards and question and answer databases. In addition, they will have to facilitate the centralized process, by pushing grantees to use the centralized call-in numbers and message boards.

In addition, the inclusion of the Information Center, the Programmatic Divisions and the development contractor in the NBS/PAM development, implementation and operations requires significant coordination. In the past, IRMO and contractors have not played a large role in STD*MIS. Collaboration is vital, as the contractors and Information Center are ultimately responsible for the development, yet DSTDP has the information required to make the development and implementation successful. At present, there are a number of DSTDP staff participating with the developers and one main liaison to the project from the Division. DSTDP is seeking to expand the role of the Division and creating a working group to help define data elements, case definitions, etc. Branch chiefs must be committed to the success of this initiative, as STD activities throughout the country will be facilitated by the NBS/STD PAM. Therefore, leadership must be willing to commit resources, make decisions and remain assertive about being included in activities with the developers and the technology divisions to ensure that user needs are met.

Culture

Relationship between grantees and CDC

Stakeholders were questioned about how their relationship with the CDC would change to support more standardization across projects and potentially the implementation of a CDC-built and supported disease application. They were tasked with not only considering the support needs, but also the types of interactions, communications and involvement required to create the culture of cooperation and inclusion they describe as necessary for success.

Participants recognize that each project will have a different relationship with the CDC. Some projects are autonomous. They require minimal support but seek to provide significant input about decisions that affect them. Other projects are more reliant. They require more assistance and seek direction from the CDC.

Leading Practice

Projects acknowledge that they will be tied to the CDC through the implementation and use of the NBS and the STD PAM, as development and updates are conducted by the CDC. Consequently, they seek to provide input and work collaboratively to standardize, implement leading practices and provide input to the STD PAM. DSTDP too, is committed to including grantees in decision making, particularly around this initiative. Staff members working on the NEDSS development are including grantees through web sessions/calls to solidify data elements and definitions. Grantees are also included through the BPMM initiative. Prioritization and feedback on system requirements will be used in release planning and grantees will be kept informed of the release schedule.

Projects cite that the ability to maintain varying relationships with the CDC and varying levels of reliance on the CDC is vital. Inclusion and input from grantees will take different forms. Creating a culture of collaboration will require significant input in design from autonomous grantees, and significant support during implementation for more reliant grantees.

In order to successfully implement standardized data elements, processes and a CDC-based application, grantees must trust that the benefits outweigh the costs of implementation. Moreover, they must trust that the CDC will deliver the support efforts and system functionality that have been agreed upon. This trust will build as comprehensive communications and iteration with stakeholders are rolled out. It is critical that projects and local health departments view communications as pro-active, and so they are not surprised by any components of implementation. It is also critical that targets, risks and any diversion from set goals are communicated, so that expectations can be adjusted.

Gap

A successful implementation can take place with either autonomous grantees or reliant grantees. With either type of grantee, there must be an adequate level of trust to create the commitment to implement. To create the culture necessary for success, there must be sufficient communication, including feedback and input from state and local health departments. Alienating autonomous grantees will result in disparate systems and processes, as they will choose their own applications, definitions and activities.

Alienating more reliant grantees will result in unsuccessful or incomplete implementation, and possible reversion back to manual processes.

Although significant efforts have been made to include state representatives in NBS development efforts and STD PAM development efforts, projects are still concerned that the CDC will develop an application that will not adequately meet user requirements, particularly those of local health department staff. This concern stems primarily from a lack of comprehension of the initiative, and a history of application development that did not fully meet user needs. The specifics of the NBS and the STD PAM still elude projects, as documentation on the functional requirements and development schedule have not been fully shared. In addition, large components of the development are still to take place (e.g. messaging, workflow, contact tracing) and significant work must be conducted at the state level to enable integration (e.g. interfaces with clinical systems, security protocols across disease areas).

The lack of understanding will hamper implementation and buy-in, as projects are fearful of unknown change. Moreover, as risks and delays have not been fully communicated, it is likely that expectations may not be met in some cases. Building the culture necessary for success will require additional communication efforts and collaborative development activities.

There is also significant risk that delays in development and/or an inability to deliver on expected functionality could hinder future efforts. The BPMM initiative and the NCSD workgroup calls have drummed up significant enthusiasm and interest in this work. Representatives have actively participated, dedicating time and resources to the initiatives. A false start, or a lack of expected outcomes would dissuade stakeholders from participating later, dissolve trust that had been developed, and potentially push grantees to choose non-CDC developed systems.

Relationship between project areas

Stakeholders were asked to consider their interactions with other project areas, how they will share information, coordinate training, co-develop process and technology enhancements, conduct analysis across state and generally support and learn from one another.

Leading Practice

Projects seek to compare information and leading practices across states for both the implementation of an integrated system and ongoing STD Prevention activities. For the implementation, they seek user groups, FAQ databases, and group problem solving. Such coordination can be driven by the CDC, with efforts such as the NCSD STD PAM workgroup and the BPMM initiative, or they can be driven externally, with efforts such as the STD Program Core Components and Strategies initiative, coordinated through NCSD.

Projects also seek to share leading practices and analyze information pertaining to STD Prevention across states. This requires more formal mechanisms to share information (e.g. a portal, weekly updates, meetings, dissemination of journal articles, a HAN). It also requires standardized data elements for analysis. Although some elements must be defined locally, state and local health departments cite that they are willing to standardize to improve analysis capability.

Gap

Interviews with states piloting NBS indicate that they have little contact with one another. They are uncertain if their challenges are similar to those experienced in other states. Although implementation is in early phases, it is precisely the time to begin user groups, build FAQ databases, and encourage group problem solving. In addition, solidifying case definitions and field definitions between states is vital. The NCSD workgroup calls are seeking to do this work, and an internal workgroup is creating some straw models to bring to the external group for validation. Standardized definitions must be readily available and provided to all NBS states. In order to promote the culture required for standardization, states must believe that they have input on the decisions, and benefit from their implementation through early inclusion and collaborative development across grantees.

It should be noted that standardization is necessary across local health departments, as well, as their staff collect the data and interpret the data field definitions. This further increases the necessity of buy-in at the state level, and identifies the need for local representation in collaborative work across the states and with the CDC.

Relationship between state and local health departments

Although the new roles of state and local health department staff members were discussed above, the ability of staff to adapt to their new roles will be affected by the relationship between these organizations. Whether local health department staff members are willing to take on more accountability, or relinquish some control, will be based on the benefits they receive and their trust of the state to support them. Stakeholders were asked to identify changes necessary in the relationship to support changing roles, new activities, and a more integrated working relationship.

In some instances, local health departments operate autonomously, making decisions independently. This enables specific, localized work but also hinders standardization. In other cases, local health departments are more reliant on state input and assistance. This model requires more work for the state (e.g. entering information, providing guidance), but facilitates consistency in practices and definitions. Grantees will commence their transformation at different points along the continuum. Autonomous local health departments may find it difficult to give up some of their independence. Dependent locals may find it difficult to assume new tasks and decision-making responsibility.

Leading Practice

As discussed above, the integrated system will require new levels of coordination between state and local health departments. States will be responsible for governance, overseeing security and data access. Disease areas will be able to access one-another's information based on security, and local health department staff will be able to share data across jurisdictions based on security. Participants at the session did not voice significant concern about state control or data sharing. In fact, Tennessee cited that they have adopted a state-wide patient management system, giving staff throughout the state access to patient data. Although only a sample of stakeholders were involved in the discussion, they stated that the benefits of accessing data will outweigh the tensions of sharing data.

Participation of local health departments in development, implementation and maintenance is paramount. Much like the discussion about the relationship between state health departments and the CDC, the relationship between local health departments and state health departments must be one of collaboration. Therefore, participants cite that local health department staff must be involved in advisory committees and roll-out plans and must receive comprehensive and early communications. They suggest pilots with carefully chosen local health departments to demonstrate success, and inclusion of local health department staff in further roll-outs, as a peer-to-peer program for implementation. However, it should also be noted that local health department representatives clearly stated that they are looking to their respective states for guidance and help with implementation and support.

Gap

Local health department staff interviewed did not have a comprehensive vision of how the NBS/STD PAM would work and the level to which they will need to standardize their processes in order to implement it. However, once it was described to them during interviews, staff suggested many good ideas for implementation, roll-out and functionality. Inclusion of local health departments will not only create ownership, but will also provide much of the key details necessary for implementation.

At present, CDC development activities rely primarily on input from CDC staff and a sample of grantees, and less on input from local health departments. Inclusion of local health departments later in development and implementation planning efforts may result in late identification of key requirements for the system. It may also result in some alienation of currently autonomous local health departments, hindering implementation efforts.

Once the new technology and processes are implemented, responsibilities will inherently shift, creating new working relationships. States will oversee governance, and security, with local health departments relying on states to administer access rights, updates and coordinate decisions affecting all users. States will have other tasks as well. For example, since data will be received by the centralized system, states will have to QA, either through automated reports or manually, provider and lab upload and entry. They will also have to retroactively de-duplicate records (e.g. after provider entry). This process will require a significant amount of coordination and trust, as the success of each state activity is essentially reliant on work of the local health department, and vice versa.

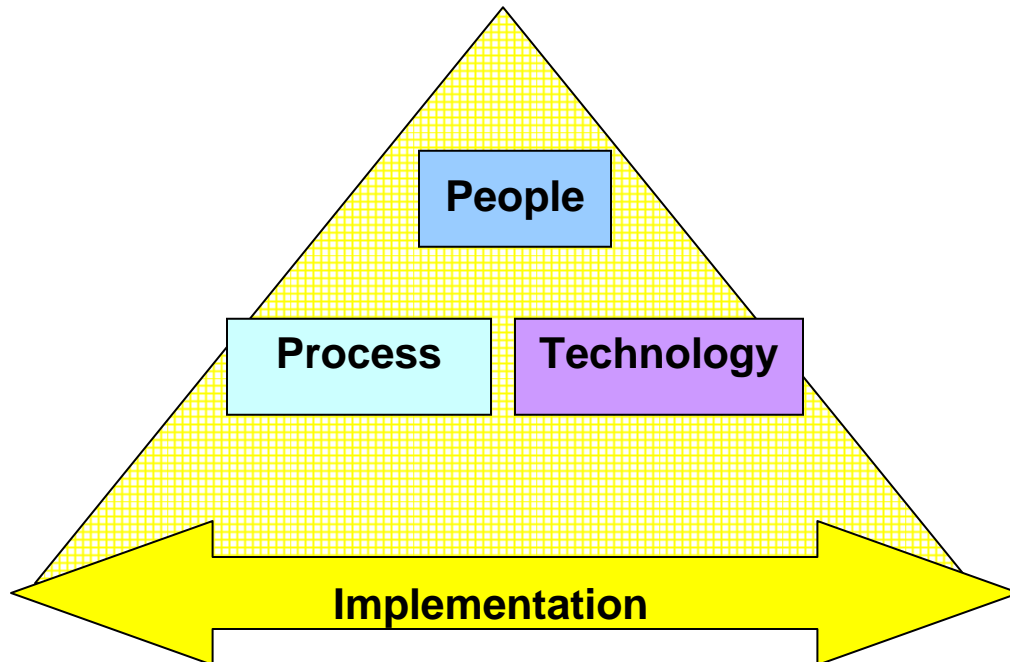
As discussed above, there are varying relationships between state and local health departments, resulting in varying levels of trust and communication. More centralized states have a culture which promotes reliance on the state by the local health departments, in the form of support, education, training and communication. Less centralized states have a culture of independence, with local health departments largely responsible for their own activities. With an integrated system, states will have to trust other departments to oversee data collection and analysis, and trust local health departments to conduct new tasks. Local health departments will have to step up to new responsibilities. States must be incented to help local health department staff learn new skills, and local health departments must be incented to conduct activities in a standardized method to ensure quality and completion. Ultimately, both parties have to be willing to relinquish some control, in order to receive the benefits of participating in integrated activities. Relinquishing control will require the trust built on inclusion and

collaboration. It will also require that parties clearly set expectations, and deliver on promised outcomes.

Conclusion

Consideration of change management is required for the successful implementation of any new system. While technology and process are the base components for implementation, the 'people' component is equally important. People must be supported during their migration to new business processes and new technology through a solid change management plan.

Change management plans require work to be clearly defined and broken out in order to identify current and future roles and responsibilities. Consequently, process modeling initiatives can assist in the identification and implementation of a change management plan by providing a taxonomy of the work that is conducted within an organization, along with accompanying definitions, giving various stakeholders a common language to discuss work activities. Modeling helps users describe their work, their requirements and illustrate leading practices. It helps build a vision for how they would like to conduct business practices in the future and document how a technology application can support that work. Process modeling helps ensure that leading practices are supported by a new technology application, as opposed to the automation of inefficient or unsuccessful existing practices.



For CDC, DSTDP and its grantees, implementation of an integrated surveillance system will be particularly complex, as it required adoption by multiple user groups, at the local, state and federal level (e.g. providers, labs, clinics, external partners, local health departments, state health departments and the CDC). Therefore, significant planning, collaboration, communication, funding, training, monitoring and feedback will be required

for successful transition and operation. The discussion above of organizational design, roles and responsibilities and organizational culture, along with the implementation success factors outlined early in the paper, will help guide DTSDP, its grantees and local health departments with their surveillance system implementation planning and address the complexities of implementing an integrated technology application.