KANSAS PUBLIC HEALTH INFORMATICS

Self-Assessment Tool

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Introduction

Public health informatics is the science and discipline that supports the effective use of information and information technology to improve the delivery of public health services. [1] As an emerging discipline, it is complicated and often not well-understood. Although complex, public health informatics is increasingly seen as critical to the future capability of health departments.

This tool supports the self-assessment of local health departments in Kansas, a decentralized system of mostly county public health departments, often small and in rural settings, that may rely upon regional shared services or the state for some capabilities. Much of the content and organization of this tool were based on the Public Health Informatics Institute's (PHII) *Informatics-Savvy Health Department Self-Assessment Tool*. The PHII tool was modified to be applicable to local health departments in Kansas, including expansion of PHII's original three informatics domains to four informatics domains. The Kansas Public Health Informatics Self-Assessment Tool evaluates activity within the following four domains:

- Vision, Strategy and Policy for Informatics
- Workforce Capability
- Organizational Competencies
- Data Exchange

Conducting the Self-Assessment

Within each domain of this tool, you will find topic questions designed to identify the level of activity (or capability maturity) for a given topic. The response options for this self-assessment were based on progression of informatics performance (*see Figure 1*, page 2), adapted from the PHII tool as well as the Capability Maturity Model, developed by the Software Engineering Institute at Carnegie Mellon University[2,3].

This self-assessment aims to provide an understanding of informatics capabilities to inform future planning. When using this tool, keep in mind access to resources and systems outside the agency. A team approach is highly recommended to perform the assessment, with a team makeup including top executives, managers/supervisors, program staff, information technology staff and other knowledgeable stakeholders.

Each question has a range of closed-ended response options (or levels) – **only one response should be selected for each question.** It is advantageous for you to answer honestly, even if you mark a lower capability. This will provide you with a benchmark to improve future performance. Also, not all capabilities may be feasible or relevant for your agency. For instance, your agency may not intend to pursue electronic medical record software, so certain topic questions may not apply. *Key Concepts* were included to provide additional clarification on a given question and *Key Questions* were added to stimulate deeper discussion. Please also find definitions for recurring terms within Appendix A, following the self-assessment.

Figure 1. Definitions of Capability Maturity Levels within Model

Capability Maturity	Level Description
0 – *Absent*	No capability is evident.
1 – *Sporadic*	Some organized efforts in one or more programs of agency but no methods to assess need or improve performance.
2 – *Systematic*	Agency-wide processes are supported by agency policies but with no method to assess needs or improve performance.
3 – *Optimized*	Agency-wide processes are supported by agency policies and with methods to assess needs and improve performance.

Please make notes that will help facilitate future work and evaluation (notes pages are made available within Appendix B following the self-assessment).

Additional Resources

A separate scoring tool is available for use with this self-assessment, called the *Kansas Public Health Informatics Self-Assessment Scoring Tool*. The scoring tool will provide an analysis of your agency's capability maturity for each topic question, by section and by a set of related informatics functions.

To address any gaps identified within the self-assessment, a list of helpful resources is identified within a separate document called *Kansas Public Health Informatics Resources*. This document provides resources that may help address informatics gaps that fall within a set of related informatics functions. Additional tools for improving informatics capacity may be found on the Public Health Informatics Institute webpage (www.phii.org).

Vision, Strategy and Policy for Informatics

1. Does the agency have a documented informatics vision and strategy?

    ❑ Level 0   Agency has not attempted to develop such a vision and strategy.

    ❑ Level 1   Agency has developed strategies in one or more programs but no agency-wide vision.

    ❑ Level 2   Agency has an adopted informatics vision with accompanying agency strategy but has no method to evaluate its implementation.

    ❑ Level 3   Agency has an adopted informatics vision with accompanying agency strategy and regularly reviews the strategy to address informatics priorities of the agency and community.

Key Concepts

Informatics **vision** refers to a statement of what the agency seeks to achieve by establishing a high level of informatics capability. The term **strategy** refers to a written "plan of action" for achieving specific goals or outcomes related to the agency's established information capability.

Key Questions

1. Has the agency produced a document widely distributed and known by most employees? Does the agency maintain this document?

2. Does the agency have strategies and action steps that address workforce needs, funding, information technology infrastructure, and partnership with both internal groups and external organizations?

3. Are there established metrics designed to measure progress toward goals? How is data collected and used to measure progress? Are the results broadly shared and discussed with staff, partners and leadership? Do metrics inform decisions and shape interventions?

2. **Does the agency have a governance process that guides implementation of informatics strategies?**

    ❑ Level 0   Agency has no process to guide strategy implementation.

    ❑ Level 1   Agency implements strategies in one or more programs but has no agency-wide implementation.

    ❑ Level 2   Agency has a documented governance process to meet strategic objectives but has no method to evaluate strategy implementation.

    ❑ Level 3   Agency has a documented governance process and evaluates strategy implementation and uses evaluation findings to improve its informatics governance process.

Key Concepts

Governance process refers to a formal process for decision-making. This may include a written plan which describes who participates in decision-making, a governance structure (e.g., committees, coalitions), and descriptions of how decisions are made.

Key Questions

1. What kinds of decisions about information strategy and investments are made at the various levels of the agency? How effective is the process?

2. Is there a policy that guides information decisions? How well-known is the policy? Is there a high degree of compliance (or non-compliance)?

3. Can a rational approach and process for prioritization, selection, procurement and development of information systems be described? Are they practiced effectively? Are the approach and process widely known?

3. **Does the agency have a systematic, sustained approach to funding informatics activities, including those to support staffing needs?**

   ❑ Level 0   Agency has no specific approach for funding informatics activities.

   ❑ Level 1   Agency informatics funding varies by project or program and no sustainable method is in place for funding.

   ❑ Level 2   Agency has a sustainable plan for informatics funding but there is no method to assess needs or improve performance.

   ❑ Level 3   Agency has a sustainable plan for informatics funding and has methods to assess needs and improve performance.

Key Concepts

A sustained approach to funding may include activities undertaken to identify the potential sources of revenue and how the organization will seek the funds (legislative strategy, grants, partnerships, monetized services, etc.) to support informatics activities. The approach should include development of a **funding plan** that describes revenue goals and includes measurable objectives or benchmarks, as well as action steps related to the funding strategy. It may also include an analysis of the financial, physical facility and human resources (both staff and volunteer) needs.

Key Questions

1. What efforts have been made related to a comprehensive funding strategy with associated informatics activities? How effective have these efforts been? How do we ensure that the approach brings value to programs?

2. How stable are the identified funding sources? How diversified?

3. Are informatics activities sufficiently funded to achieve the operational goals and objectives? Are there current or anticipated gaps in funding that require specific strategies?

4. **Does the agency have processes to select software and hardware for future agency use?**

❑ Level 0   Agency has not adopted a standard software or hardware selection process.

❑ Level 1   Agency selects and purchases as project or program needs arise with no standard process.

❑ Level 2   Agency has a standard process to select software and hardware but has no method to assess needs or evaluate performance of procured software or hardware.

❑ Level 3   Agency has a standard process to select software and hardware and has methods to assess needs and evaluate performance of procured software and hardware.

Key Concepts

Before **procuring a new system** that includes all hardware and software necessary for an application, a process should be in place to consider decision factors, including a feature comparison of retail systems, cost versus benefit, system users and access, application training, maintenance, and a location of system. Before **enhancing a current system or designing a new system** to meet specific or unique needs, a **software development process** should be in place that may include some factors from above as well as additional design factors such as: concept development, requirements definition, design and development, testing, training and implementation, operations and maintenance, and location of system. A detailed **requirements definition** is particularly essential, as it includes understanding what the information system must do to meet defined objectives. The output of requirements definition identifies, in very granular detail, the new product to be built or how an existing system is to be enhanced.

Key Questions

1. Does the agency have a recognized and documented software procurement/development process? Is the process standardized across the agency? Is the process available to all stakeholders, both within the programs and within central information technology (IT)?

2. Is the software procurement/development process used routinely and systematically? Is there a high degree of adherence across the agency?

3. Is there a method to measure how broadly the process is utilized? Are these findings shared and used for process improvement?

5. **Does the agency have processes in place to make public health data accessible to external partners and the general public?**

   ❑ Level 0   Agency has no processes to support data access.

   ❑ Level 1   Agency provides data when requested, but processes vary by program or request.

   ❑ Level 2   Agency-wide policies exist for public health data accessibility but there is no method to assess needs or improve effectiveness of policies.

   ❑ Level 3   Agency has policies for public health data accessibility and has methods to assess needs and improve effectiveness of policies.

Key Concepts

Data requests are a common occurrence and may originate from policymakers, external partners and the public. Optimal agencies have uniform processes that support prioritization and prompt response to data requests. Policies should include means for the agency to receive and process data requests from organizations or the public for data owned or stewarded by the agency. Additional policies may help establish basic reporting requirements for a community which, in turn, may lead to the creation of processes for information reporting. The agency should also maintain awareness of public health data existing outside of the agency and identify means to obtain access to that data. **Public health data** may include vital statistics records, reportable conditions information, environmental concerns, or other metrics that impact a community.

Key Questions

1. Does your agency have policies that address providing public health data to other departments and external requesters? Does the agency have clear policies and procedures to ensure data requestors have lawful access to the data being requested?

2. Are there standard data request forms available for external partners, researchers and the public? Are there fees associated with certain data requests?

3. Does the agency have a process for prompt response to requests? Are there standard processes to identify priority requests?

4. Does a process exist to evaluate the user's satisfaction with the data available?

5. Does the department have a protocol for setting bench marks for response times, number of requests executed, or other metrics for provision of data to relevant parties?

6. **Does the agency use information technologies to capture information for emergency responses in the field and in the health agency?**

❑ Level 0   Agency does not use information technologies for emergency responses.

❑ Level 1   Agency uses information technologies in one or more programs involved in response but no agency-wide policies or strategies exist.

❑ Level 2   Agency has a documented strategy with policies for use of information technology for emergency response but has no method to assess needs or improve performance.

❑ Level 3   Agency has a documented strategy with policies for use of information technology for emergency response and has methods to assess needs and improve performance.

Key Concepts

Capturing information for emergency response supports ongoing **situational awareness** to identify, process and comprehend critical elements of the environment to anticipate future changes and mitigate damage. This information may be both taken by responders for response coordination as well as provided to responders for an understanding of the current status of the incident. The strategy for use of information technologies for information capture during emergency response may include policies for collection of information from the field and appropriate tools and systems (including mobile computing systems and appropriate software and databases) to input information or take measurements during an emergency.

Key Questions

1. If you have a policy or strategy, how well-known is the policy or strategy? Is there a high degree of compliance (or non-compliance)?

2. Are there guidelines for how to prioritize the implementation of information technology for information capture during an emergency? Are these guidelines well-known? Are the processes related to these policies and strategies effectively executed?

3. Does the agency have a process to evaluate the policies and strategies? Are they revisited and improved with relative frequency to adapt to change?

Workforce Capability

7. Do agency program staff have the skills to use information systems and tools effectively?

- ❑ Level 0   Agency has no staff with such skills.

- ❑ Level 1   Agency has some program staff with adequate skill to use program information systems and tools.

- ❑ Level 2   Agency programs all have staff with appropriate skills to effectively use program information systems and tools but agency has no method to assess needs or improve performance.

- ❑ Level 3   Agency programs all have staff with appropriate skills to effectively use program information systems and tools and has methods to assess needs or improve performance.

Key Concept

Information systems are software in use to support program activities and to store public health data. Examples within Kansas are EpiTrax, DAISEY and KSWebIZ but may also include other commercial systems. Program staff are the primary users and administrators of agency information systems. Users of information systems need to know when those systems are not meeting their needs—resulting in frustrating work-arounds, inefficient workflows, or other problems—and should be savvy enough to identify and report their needs in sufficiently clear terms to serve as requirements for enhancements.

Key Questions

1. Are staff savvy in identifying when a system does not match their workflows, business needs or other requirements?

2. Can staff articulate or document their needs in terms of what the information systems need to accomplish?

3. Does the agency have processes that allow for workforce development to address changing needs of information technology? How does the agency evaluate their needs?

8. **Does the agency have, or have access to, individuals with advanced training or experience in public health informatics?**

❑ Level 0   Agency has no access to persons with advanced training or experience in public health informatics.

❑ Level 1   Agency has one or more programs having persons with limited training or experience in public health informatics.

❑ Level 2   Agency has, or has access to, at least one person with advanced training or experience in public health informatics but has no method to assess needs or improve access.

❑ Level 3   Agency has at least one person with advanced training or experience in public health informatics and has methods to assess needs and improve access to appropriate expertise.

Key Concepts

Individuals with advanced training or experience in public health informatics are individuals that have the necessary combination of knowledge, demonstrated skills and abilities to contribute successfully to effective informatics practice; these persons may be an academically trained "**informatician**" or a person having years of experience with public health informatics. Some examples of skills needed are basic and advanced descriptive statistics, systems optimization, database management and so on. While an on-site informatician may not be possible or feasible in many agencies, it is a good measure of informatics maturity within an agency.

Key Questions

1. Has the agency evolved informatics capacity-building efforts to a point at which recruiting an academically prepared informatician is a next logical step? What competencies, knowledge and credentials are needed in future staff?

2. Do staff members have access to experts in specific domains of informatics, such as health IT vocabulary, messaging and transport standards? Is staff available with sufficient expertise to gather and assess national level standards for adoption and use by programs? Does staff have access to project management professionals and business analysts?

9. **Does the agency have an organizational focal point for informatics (e.g., an informatics unit or a Chief Informatics Officer) with agency-wide responsibility and authorities, including those related to the agency's informatics vision, strategies and policies?**

   ❑ Level 0   Agency has not attempted to establish such a focal point.

   ❑ Level 1   Agency has one or more persons providing informatics expertise in one or more programs but no agency-wide activity.

   ❑ Level 2   Agency has established an organizational focal point with processes and policies to address agency vision and strategies but has no method to assess needs or improve performance.

   ❑ Level 3   Agency has established an organizational focal point with processes and policies to address agency vision and strategies and has methods to assess needs and improve performance.

Key Concepts

For informatics-savvy agencies, establishing a focal point for informatics is a key step toward meeting an agency's informatics vision. A **Chief Informatics Officer,** or informatics unit, responsible for addressing agency strategies, can assist in maintaining consistency of efforts and high-level performance of agency. Ideally, these functions will be facilitated by an academically trained or experienced informatician.

Key Questions

1. If the agency has considered or is currently building informatics capability through establishing informatics focal areas, have key decisions been identified? What types of responsibilities are within the scope of informatics? How will/are informatics and IT efforts coordinated?

2. If you have a designated individual or unit, are their cross-agency responsibilities and authorities clearly defined? Accepted by the program units? By senior leadership? IT services?

3. Is any funding from more than one source, so that the individual/unit is not beholden to a program that might be underwriting the position?

4. Is the scope of activity only internal or does it extend to working with, for instance, the Medicaid program, health information exchanges or other entities external to the agency?

10. Do agency program managers/supervisors have the informatics knowledge and skills necessary for high program performance?

❑ Level 0 Agency program managers/supervisors do not have such informatics knowledge and skills.

❑ Level 1 Agency has at least one program manager/supervisor with appropriate informatics knowledge and skills.

❑ Level 2 The agency program managers/supervisors have appropriate informatics knowledge and skills but the agency has no method to assess needs or improve performance.

❑ Level 3 The agency program managers/supervisors have appropriate informatics knowledge and skills and the agency has methods to assess needs and improve performance.

Key Concepts

Appropriate informatics knowledge and skills refer to the set of informatics principles, concepts, methods and tools necessary for program managers/supervisors to know what should be expected to provide high program performance. These expectations include 1) system performance, 2) information technology support, and 3) the quality and value of the data collected, managed and reported. **For senior managers/supervisors**, this may also include understanding how system design requirements were gathered and vetted, whether end users were involved in the design, where the risks lie, and whether the system is delivering value.

Key Questions

1. Have we defined what informatics competencies, knowledge and skills a manager should have? Are these stated in position descriptions?

2. Are senior managers appropriately engaged and knowledgeable about the information systems under their authority? Do they have the knowledge to ask "tough" questions of the systems managers, IT or vendors?

3. Do information system managers have the informatics knowledge and skills necessary to systematically identify system requirements for enhancements, and ensure appropriate change control and roll-out of those enhancements?

4. Do information system managers have the informatics knowledge and skills necessary to effectively manage IT support, whether internal or external?

11. Does the agency have human resource strategies that include considerations for recruitment and competency-building in informatics?

❑ Level 0 Agency does not have human resource strategies that include considerations for informatics.

❑ Level 1 Agency occasionally considers informatics needs when recruiting new staff or training existing staff.

❑ Level 2 Agency has human resource strategies that include considerations for informatics but has no method to assess needs or evaluate performance.

❑ Level 3 Agency has human resource strategies that include considerations for informatics and has methods to assess needs and evaluate performance.

Key Concepts

Human resource strategies often include agency-wide efforts to meet organizational performance needs by 1) identifying specialists needed to deliver agency capabilities, 2) defining personnel competency requirements, and 3) outlining comprehensive training plans for improving informatics competencies. Personnel competency requirements may be defined for all staff, managers/supervisors, Chief Informatics Officer (as available), etc. A **workforce planning strategy** may include needs assessment, recruitment of informatics-savvy individuals, training and development, retention and succession planning. For informatics, the workforce strategy may include creating new positions or, because that is not always possible or desirable, training existing staff who have the interest and aptitude in informatics.

Key Questions

1. Is informatics recognized as a discipline distinct from information technology? Is there a communications strategy to clarify the distinction?

2. Has any assessment of human resource needs for informatics capacity been explored?

3. Is there a formal written plan for recruitment, training and development, and retention of personnel with experience or formal training in informatics?

Organizational Competencies

12. **Does the agency have processes in place to initiate investigation if surveillance trigger points are met for priority public health issues?**

   ❑ Level 0   Agency has no processes for investigation.

   ❑ Level 1   Agency emergency response activities occur sporadically for some trigger points.

   ❑ Level 2   Agency has processes in place to initiate investigation for identified trigger points but has no method to assess needs and improve performance.

   ❑ Level 3   Agency has processes in place to initiate investigation for identified trigger points, and has methods to assess needs and improve performance.

Key Concepts

Surveillance baselines should be available as markers of previous levels of disease, mortality, environmental conditions, or other issues pertaining to public health that serve as a basis for comparison. Knowledge of baselines allows for identification of **trigger points**, thresholds for an event at which point investigation or intervention should occur to improve a developing public health emergency. For example, a trigger point might be a count of sexually transmitted infection cases that reach a concerning threshold. Investigations and interventions aim to return the current issue back to baseline ('normal') conditions for the community.

Key Questions

1. Does the agency track surveillance data over time to revise trigger points?

2. If an emergency occurs, does the agency have processes to trigger an investigation and monitor the situation until conditions return to the baseline levels?

3. Are there established processes for assessment of measurement systems and to update information to represent the most up-to-date needs?

13. Does the agency have processes in place to monitor the status of a public health emergency?

❑ Level 0   Agency has no such processes to monitor the status of public health emergencies.

❑ Level 1   Agency monitors the status of some public health emergencies.

❑ Level 2   Agency has defined processes for monitoring public health emergencies but has no method to assess needs or improve performance.

❑ Level 3   Agency has defined processes for monitoring public health emergencies and has methods to assess needs or improve performance.

Key Concepts

The ability to monitor the status of a public health emergency allows an agency to make informed decisions in the response to developing situations, including coordination of emergency responders, information-sharing with other response agencies, and to inform policymakers and the public on current conditions. This supports ongoing situational awareness to identify, process and comprehend critical elements of the environment to anticipate future changes and mitigate damage. This information may be both taken by responders for response coordination as well as provided to responders for an understanding of the current status of the incident. Optimal processes ensure effective, secure and timely exchange of information in a public health emergency.

Key Questions

1. In the event of an emergency, can the agency measure and collect information related to the emergency until the emergency event has expired?

2. Can the agency send information to policymakers and the public to keep them up to date on the most current information related to an emergency?

3. Is the agency able to evaluate and update its processes and systems to monitor emergency needs?

14. Does the agency have processes to ensure continuity of operations for mission-critical *information systems* during emergency situations?

❑ Level 0   Agency has no such processes to maintain information systems.

❑ Level 1   Agency has processes to ensure continuity of operations for some programmatic information systems.

❑ Level 2   Agency has processes to ensure continuity of operations for mission-critical information systems but has no method to assess needs or improve performance.

❑ Level 3   Agency has processes to ensure continuity of operations for mission-critical information systems and has methods to assess needs or improve performance.

Key Concepts

Information systems are software in use to support program activities and to store public health data. Examples within Kansas are EpiTrax, DAISEY and KSWebIZ but may also include other commercial systems. **Continuity of operations** is the ability for agency operations to persist following loss of facility, communications infrastructure, or personnel. It is optimal for agencies to have contingency plans in place for a variety of scenarios as well as redundant systems.

Key Questions

1. If an emergency occurs, does the agency have established procedures and systems which can assure that operations continue to upload and access information with programmatic information systems?

2. Does the agency test these systems to determine their workability in case of an emergency?

3. Does the agency evaluate their systems and processes to improve systems and to update systems to deal with the most up-to-date information and address the most current threats?

4. Has the agency fully tested restoring local applications and data from back-ups?

15. **Does the agency have processes to ensure continuity of operations for mission-critical *communication systems* during emergency situations?**

   ❑ Level 0   Agency has no such processes to maintain communication systems.

   ❑ Level 1   Agency has processes to ensure continuity of operations for some programmatic communication systems.

   ❑ Level 2   Agency has processes to ensure continuity of operations for mission-critical communication systems but has no method to assess needs or improve performance.

   ❑ Level 3   Agency has processes to ensure continuity of operations for mission-critical communication systems and has methods to assess needs or improve performance.

Key Concepts

Communication systems are software that allow for targeted or mass communications through electronic means. Examples may include social media systems (such as Facebook or Twitter) and e-mail, but also emergency communications systems (e.g., CodeRED, Everbridge Mass Notification). **Continuity of operations** is the ability for agency operations to persist following loss of facility, communications infrastructure, or personnel. It is optimal for agencies to have contingency plans in place for a variety of scenarios as well as redundant systems.

Key Questions

1. If an emergency occurs, does the agency have established procedures and systems which can assure that individuals or the public may be notified of threats and provided instructions to mitigate further damages?

2. Does the agency test these systems to determine their workability in case of an emergency?

3. Does the agency evaluate their systems and processes to improve systems and to update systems to deal with the most up-to-date information and address the most current threats?

4. Has the agency fully tested utilizing communications systems for crisis communication?

16. **Does the agency have procedures for ethical operations including privacy, confidentiality, and informed consent?**

   ❑ Level 0 Agency has no procedures for ethical operations.

   ❑ Level 1 Agency has procedures for ethical operations in some programs.

   ❑ Level 2 Agency has agency-wide policies and procedures for ethical operations but has no method to assess needs or improve performance.

   ❑ Level 3 Agency has agency-wide policies and procedures for ethical operations and has methods to assess needs and improve performance.

Key Concepts

Procedures are an established or official way of doing something in a detailed list of tasks or actions, defined and driven by written policy, and needed to ensure privacy, confidentiality and informed consent practices to achieve appropriate ethical operations. The policies and procedures are often accompanied by information technology safeguards to protect data in electronic environments.

Key Questions

1. Are enforceable practices in place to ensure privacy, confidentiality and informed consent? Are they adhered to?

2. Are processes or procedures in place that allow for measurement of compliance to policies in place? Is the data generated from these procedures used to improve practice?

3. Are the policies and procedures regularly reviewed and updated as needed?

17. Does the agency have established data management processes?

- ❑ Level 0   Agency has not adopted processes for data management.

- ❑ Level 1   Agency has data management processes within some programs.

- ❑ Level 2   Agency has adopted agency-wide data management policies and processes but has no method to assess needs or improve performance.

- ❑ Level 3   Agency has adopted agency-wide data management policies and processes and has methods to assess needs and improve performance.

Key Concepts

Robust **data management** procedures include systematized plans and processes to collect, protect and enhance data quality for an agency. Quality assurance procedures include protocols to assess and ensure the accuracy, completeness and timeliness of incoming and existing data.

Key Questions

1. Are data management and data quality assurance procedures documented? If so, are they fully implemented? Are these procedures standardized and shared across the agency?

2. Are the processes for data handling evaluated consistently across the agency? Are these findings used to improve upon and expand data management and data quality procedures? Do these findings influence programmatic, operational or information technology development decisions?

18. Does the agency have established procedures for data protection?

❑ Level 0 Agency has no procedures for data protection.

❑ Level 1 Agency has data protection procedures for some programs.

❑ Level 2 Agency has adopted agency-wide data protection policies and procedures but has no method to assess needs or improve performance.

❑ Level 3 Agency has adopted agency-wide data protection policies and procedures and has methods to assess needs and improve performance.

Key Concepts
Data protection should include processes for data preservation, curation and security, as well as a system to back up data. Optimal data protection processes and policies contain confidentiality protocols, data use agreements, and applicable statutes or rules for data protection.

Key Questions
1. Are there established processes to archive and retrieve collected public health data in case of hardware failure?

2. Does the agency have a set process for securing collected data, including considerations for hardware, software, and personnel best practices (e.g., locking workstations, locking server rooms)?

3. Are the procedures evaluated to identify gaps in data protection and to determine remedies to those gaps (e.g., software controls and updates, staff trainings, agency policy updates)?

19. **Does the agency have procedures regarding the collection and documentation of public health data?**

    ❑ Level 0   Agency has no such procedures for collection and documentation of data.

    ❑ Level 1   Agency has procedures for collection and documentation of data within some programs.

    ❑ Level 2   Agency has documented procedures for collection and documentation of data but has no method to assess needs or improve performance.

    ❑ Level 3   Agency has documented procedures for collection and documentation of data and has methods to assess needs and improve performance.

Key Concepts

Procedures may include training, policy development and optimizing technology for data collection and documentation. **Collection** involves the development and implementation of instruments to gather information from populations of interest. The **documentation** of data involves the development of a description of the processes and methods of collection and the information maintained in the dataset. **Public health data** may include vital statistics records, reportable conditions information, environmental concerns, or other metrics that impact a community.

Key Questions

1. Are there established processes to initiate and execute data collection? Does the agency chronicle the collection process and is the information collected documented?

2. Does the agency have a set process for documentation of data collection processes and the information collected within the database?

3. Are the procedures evaluated to allow for improved data collection and to better identify the information collected in the database?

20. Does the agency have processes for the integration of data from multiple data sources?

    ❑ Level 0   Agency had no such processes for integration.

    ❑ Level 1   Agency has processes for the integration of some data within one or more programs.

    ❑ Level 2   Agency has integrated data from multiple data sources but has no method to assess needs or improve performance.

    ❑ Level 3   Agency has integrated data from multiple data sources and has methods to assess needs and improve performance.

Key Concepts

Data integration is the combination of data from different but related sources to provide a meaningful, valuable and unified view of the underlying system. Shared or centralized data sources such as provider registries or master patient indexes can allow an agency to link multiple datasets together to show a more comprehensive picture of health for a population or even individuals. They can allow programs to view "missing pieces" with data from outside of their program areas and allow access to resources and tools they would not otherwise be able to implement. Shared data sources can also facilitate a uniform and standards-based adoption of programmatic functions, while supporting common goals and processes.

Key Questions

1. Do shared data sources exist across the agency? Are programs across the agency represented in design and development discussions?

2. Do standardized processes exist for updating and sharing these resources centrally? Are these standardized processes adhered to?

3. Are shared or centralized data sources and related processes supported financially and operationally across the agency?

21. **Does the agency have the capability to analyze data using basic descriptive statistics?**

❑ Level 0   Agency does not have the capability for basic analysis.

❑ Level 1   Agency has capability to analyze some data using basic descriptive statistics within some programs.

❑ Level 2   Agency has capability within each program to analyze data using basic descriptive statistics but has no method to assess needs or improve performance.

❑ Level 3   Agency has capability within each program to analyze data using basic descriptive statistics and has methods to assess needs and improve performance.

Key Concepts

Descriptive statistics are calculations that describe or summarize features of a sample of data or a set of observations. Basic descriptive statistics are commonly measures of central tendency or measures of dispersion. A **central tendency** is a typical (central) value for probability distribution of a dataset and includes measures of mean, median, mode, etc. The **dispersion** (variability) describes characteristics of the data including the spread of data points of a dataset and includes measures of range, quantiles and standard deviation. An example of both is calculation of the mean monthly reportable disease count as well as the standard deviation or error to account for differences between months. A strong foundation in descriptive statistics is important for communicating health data, as well as health risks, to policymakers and the public.

Key Questions

1. Do staff understand when it is appropriate to use statistical analyses?

2. Do staff understand which statistical analyses to use?

3. Does the agency rely on expertise from outside the agency to conduct statistical analyses?

22. Does the agency have procedures in place to provide interpretation of data?

❑ Level 0   Agency has no procedures for interpretation.

❑ Level 1   Agency has capability to interpret simple data sets and analysis within some programs.

❑ Level 2   Agency has capability within each program to interpret data sets and their analysis but has no method to assess needs or improve performance.

❑ Level 3   Agency has capability within each program to interpret data sets and their analysis and has methods to assess needs and improve performance.

Key Concepts

Interpretation of data involves the explanation of meaning of analyses and the findings thereof. Processes for interpretation are sets of activities that the agency has in place to describe 1) methods of data collection and analysis, 2) results of data analysis, 3) discussion on relevance and implications of findings, 4) assessment of data quality or limitations, and 5) conclusions and framing of the data. This can include analysis and interpretation of either primary data (collected by the agency) or secondary data (data collected by another entity).

Key Questions

1. Does the agency have any staff that can interpret the result of statistical analyses for agency-specific work or outside work which may be important to the agency?

2. Is the agency able to express the results of the analyses to the public, interested stakeholders, and policymakers in a clear and meaningful way?

23. Does the agency have the capability to conduct a comprehensive community health assessment and identify health priorities from that assessment?

❑ Level 0   Agency has no capability to conduct a community health assessment.

❑ Level 1   Agency uses some tools and resources when conducting a community health assessment, but it is not comprehensive.

❑ Level 2   Agency uses data and tools/resources when conducting a community health assessment and prioritizing health issues but has no method to assess needs or improve performance.

❑ Level 3   Agency uses data and tools/resources when conducting a community health assessment and prioritizing health issues and has methods to assess needs and improve performance.

Key Concepts

A **community health assessment** is a systematic assessment of health indicators for a given community or population that is used to identify both advantages and disadvantages in a community. Ideally, if a department can conduct a community health assessment, they can also develop strategies to address issues and identify needs. Processes include identification of pertinent data sources, tools for analysis and compilation of findings, and other resources that contribute to the goal of identifying needs of the community. Optimal community health assessments include considerations for health disparities within the community.

Key Questions

1. Does the agency have any staff trained in the methods for community health assessment? Are those skills regularly practiced so they can be utilized by the agency?

2. Has the agency ever conducted a community health assessment? If so, were the agency staff learn priorities for a community health improvement plan?

3. Does the agency have a process for evaluating community health assessment goals?

4. Does the agency have a process for evaluating and improving the tools and resources available to the department for conducting a community health assessment?

Data Exchange

24. Does the agency have procedures for establishing data-sharing agreements?

   ❑ Level 0   Agency has not adopted such a procedure.

   ❑ Level 1   Agency has some data-sharing agreements but has no procedures governing their development.

   ❑ Level 2   Agency has procedures for establishing data-sharing agreements but has no method to assess needs or improve performance.

   ❑ Level 3   Agency has procedures for establishing data-sharing agreements and has methods to assess needs and improve performance.

Key Concepts

Data-sharing agreements are used to establish clear parameters for exchange between organizations or operational units within an agency. These are written agreements that may include: descriptions of allowable use of data, responsibilities of the parties to the agreement, the legal authority or business reason to share data, frequency of data exchange, provisions for reporting violations of agreements, privacy provisions and security provisions, and agreement of the purpose for the data exchange and agreement on specific data elements to be exchanged.

Key Questions

1. Has the agency adopted procedures for establishing data-sharing agreements? Do most staff members know about the procedures?

2. To what degree are they effectively used? Are staff members trained and supported to execute the development of data-sharing agreements? Do they have access to resources to support the development, execution and monitoring of compliance to data-sharing agreements?

25. **Does the agency have the capability to receive and process electronic health data sent from external partners?**

    ❑ Level 0   Agency has no capability to receive and process electronic health data from external partners.

    ❑ Level 1   Agency receives and processes electronic health data from external partners for some agency functions.

    ❑ Level 2   Agency has capability to receive and procedures to process electronic health data from external partners, but has no method to assess needs or improve performance.

    ❑ Level 3   Agency has capability to receive and procedures to process electronic health data from external partners, and has methods to assess needs and improve performance.

Key Concepts

Receiving a message means that the message reaches its intended target. **Processing** a message includes the ability to parse, store and retrieve data. It also implies that the recipient can "read" or access the information contained in the message. Message processing capability also includes validating that the information contained in the message conveys an expected or appropriate value. Ideally, message receipt and processing would be automated, requiring minimal manual effort and human intervention.

Key Questions

1. Do programs or applications currently receive electronic data from external partners? Are these programs or applications standards-based (e.g., HL7 messaging)?

2. Does the agency have a process for evaluating their current capabilities for receiving or processing data from external partners? If so, are these evaluation data used to expand the agency's capacity for data exchange?

26. Does the agency have processes for data exchange with external partners during emergency responses with information technology support?

- ❑ Level 0   Agency has no processes for data exchange during emergency responses.

- ❑ Level 1   Agency sends or receives data as needed but with no information technology processes.

- ❑ Level 2   Agency has processes for information technology-supported data exchange during emergency response but has no method to assess needs and improve performance.

- ❑ Level 3   Agency has processes for information technology-supported data exchange during emergency response and has methods to assess needs and improve performance.

Key Concepts

Data exchange for emergency responses may include communicating information collected from the field during response operations, but often entails sending and receiving communications for the coordination of the public health and medical response. **Information technology** for emergency responses encompasses appropriate tools and systems, including mobile computing systems and emergency management software (such as WebEOC or EMResource).

Key Questions

1. Has the agency completed an assessment of information technology in use by external partners for data exchange? Are there common technologies in use (e.g., WebEOC, EMResource)?

2. Does the agency have a process to evaluate the policies and strategies? Are they revisited and improved with relative frequency to adapt to change?

3. Have key external partners been identified? Have they been categorized by type or function (e.g., key decision-makers/influencers, consumers, data-sharing partners)?

27. Does the agency have policies for data exchange with external stakeholders?

❑ Level 0 Agency has no policies for data exchange.

❑ Level 1 Agency has policies in one or more programs for data exchange with their external stakeholders.

❑ Level 2 Agency has agency-wide policies for data exchange with their external stakeholders but has no method to assess needs or improve performance.

❑ Level 3 Agency has agency-wide policies for data exchange with their external stakeholders and has methods to assess needs and improve performance.

Key Concepts

Stakeholder refers to any individual, group or organization that may be affected by decisions or actions of the agency. **Stakeholder engagement** refers to the process by which individuals and organizations are invited to participate in a process to gauge important issues and provide the agency with actionable areas of work. Evidence of a stakeholder strategy could be documented through an assessment.

Key Questions

1. Have key external stakeholders been identified? Have they been categorized by type or function (e.g., key decision-makers/influencers, consumers, data-sharing partners)?

2. Is there a process that includes specific engagement and communication plans for external stakeholders?

28. Does the agency have processes in place to disseminate summary reports and other pertinent information?

❑ Level 0   Agency has no such processes to disseminate summary reports and other pertinent information.

❑ Level 1   Agency allows programs to disseminate summary reports and other pertinent information by their own processes.

❑ Level 2   Agency has processes in place for the dissemination of summary reports and other pertinent information but has no method to assess needs or improve performance.

❑ Level 3   Agency has processes in place for the dissemination of summary reports and other pertinent information and has methods to assess needs and improve performance.

Key Concepts

Summary reports are condensed communication of a pertinent health issue or a combination of public health issues pertinent to the local jurisdiction.[4] Types of summaries and their timing of dissemination depend upon data availability and urgency of the health issue and may be supplemented with additional data. Summary report types may include press releases, issue briefs, regular epidemiology updates, press releases, and other media.

Key Questions

1. Do staff participate in trainings to improve communications competencies? Are staff guided in utilizing the most appropriate type of summary report to disseminate communications messages?

2. Has the agency developed good relations with local media who may disseminate summary reports?

29. **Does the agency have a communication system to electronically alert stakeholders of new or ongoing emergencies on a 24/7 basis?**

❑ Level 0   Agency has no system for electronic notification.

❑ Level 1   Agency has an electronic notification system to electronically alert some stakeholders.

❑ Level 2   Agency has a communication system to electronically alert stakeholders with defined procedures for its use but has no method to assess needs or improve performance.

❑ Level 3   Agency has a communication system to electronically alert stakeholders with defined procedures for its use and has methods to assess needs and improve performance.

Key Concepts

Communication systems are software that allow for targeted or mass communications through electronic means. Examples may include social media systems (such as Facebook or Twitter) and e-mail, but also emergency communications systems (e.g., CodeRED, Everbridge Mass Notification). Communication policies can include the procedures for sending alerts or the use of electronic systems to notify community members. **Stakeholders** include public health staff, elected officials, emergency responders and the public.

Key Questions

1. Does the agency have a system for sending out information and updates to providers, public health staff, and the public in the event of an emergency?

2. Is the agency able to assess their needs for emergency communications or to evaluate areas for improvement of the systems in place?

Appendix A: Definitions

- *"Assess Needs":* a process to determine gaps between the current and desired position of an agency for informatics capability
- *"Improve Performance":* a process to take steps to better utilize current informatics capabilities or improve capacities address needs of the agency
- **Agency:** a public health department or another organization operating on behalf of local government that is charged with the assurance of public health service delivery within the local jurisdiction
- **Capability:** the extent to which something can be done, including the skills, processes, and tools in place that allow performance of a task
- **Capacity:** a measure of how much of a task can be performed, with considerations for meeting demands and how many professionals have capability to perform
- **Communication Systems:** software that allows for targeted or mass communications through electronic means (e.g., social media systems, e-mail, emergency communications systems)
- **Data Integration:** combining data from different but related sources to provide a meaningful, valuable and unified view of the underlying system
- **Descriptive Statistics:** calculations that describe or summarize features of a sample of data or a set of observations (e.g., mean, median, range, standard deviation)
- **Informatician:** individual with advanced training or experience in public health informatics who has the necessary combination of knowledge, demonstrated skills and abilities to contribute successfully to effective informatics practice
- **Information Systems:** software to capture, store, manage or transmit information related to the health of individuals or the activities of the program (e.g., EpiTrax, DAISEY, KSWebIZ)
- **Information Technology:** application of computers to store, study, retrieve, transmit and manipulate data or information
- **Policy:** a guideline or standard that provides a statement of position with respect to a given topic
- **Procedure:** an established or official way of doing something that is documented as a detailed list of tasks or actions to achieve a particular objective
- **Process:** a general series of actions or steps taken to achieve a particular end

- **Program**: agency divisions or other groupings of functions within the health department, typically overseen by a manager/supervisor (e.g., public health clinic, maternal and infant program, epidemiology)

- **Public Health Data**: data which provides information on health statuses or indicators for a specific population (e.g., vital statistics records, reportable conditions information, environmental concerns)

- **Public Health Informatics**: the science and discipline that supports the effective use of information and information technology to improve the delivery of public health services

- **Situational Awareness**: the ability to identify, process and comprehend critical elements of the environment to anticipate future changes and mitigate damage

- **Strategy**: a written "plan of action" for achieving specific goals or outcomes related to the agency's established information capability

- **Surveillance**: the ongoing systematic collection, analysis, and interpretation of data, closely integrated with the timely dissemination of these data to those responsible for preventing and controlling disease and injury

- **Vision**: a statement of what the agency seeks to achieve by establishing a high level of informatics capability

Appendix B: Notes

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Appendix C: Endnotes

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