The Management Moment

Building the Business Case for Public Health Information Systems

Edward L. Baker, MD, MPH; William Brand, MPH; Arthur Davidson, MD, MPH; Martin LaVenture, PhD, MPH, FACMI; Vivian Singletary, MBA; Perry Smith, MD

Context

Public health practice is an information business. Over the past few decades, information systems have become foundational for the practice of public health at the local, state, and federal levels. These developments have enhanced surveillance practice and routine and emergency response, along with improving the efficiency of day-to-day operations of health agencies at all levels. Despite these improvements, public health agencies are increasingly challenged to respond to the opportunities that lie ahead as they attempt to enhance the availability and quality of information needed to promote and protect the health of populations.[1]

In recent years, the health care system has entered a period of extraordinary and unprecedented increase in the use and exchange of digital health information and the rapid adoption of electronic health record (EHR) systems ushering in the eHealth revolution.[2] Furthermore, as individuals seek instant access to health-related information and as communities use information systems to monitor health risks and health status across increasingly smaller geographic areas, the complexity of health information systems and analytic requirements have expanded dramatically.

Unfortunately, although progress has been made, the pace of change in the public sector, especially in governmental public health organizations, has not kept pace with the extraordinary rate of change in other health sectors. Several factors can be identified as contributing to this slower pace that jeopardize the ability of these public health organizations to protect and promote health; these include resource limitations, inadequate knowledge, lack of political will, and the silo-driven nature of the public health enterprise.

To address these and other challenges and to accelerate the design, deployment, and operation of robust information systems, agencies must develop a strong business case for investment in these systems. In this column, we describe the essential components of a sound business case and then delineate the elements of a strong business case for investing in public health information systems—an organizational imperative for the future of public health agencies.

What is a business case?

Public health professionals often do not see themselves as being in "a business." However, public health agencies make services available to our constituents by performing a range of business practices. Therefore, much can be learned by applying sound business practices to the operations of public health agencies including development of the business case for an investment.

> Business cases are the single most important document in helping leadership and management understand the business value of an investment or business opportunity. An effective business case is a multi-purpose document that generates the support, participation and leadership commitment required to

Author Affiliations: Task Force for Global Health, Public Health Informatics Institute, Decatur, Georgia (Dr Baker, Mr Brand, and Ms Singletary); Denver Public Health, Denver Health, Denver, Colorado (Dr Davidson); Office of Health IT and eHealth, Minnesota Department of Health, St Paul, Minnesota (Dr LaVenture); and School of Public Health, University at Albany, State University of New York, Albany, New York (Dr Smith).

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Correspondence: Edward L. Baker, MD, MPH, 25 Vassal Lane, Cambridge, MA 02138 (edwardlbaker@gmail.com).

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transform an idea into reality. A business case identifies an idea, problem, or opportunity. It provides context and content around the problem, including core drivers, and illustrates the desired objectives and outcomes.[3]

What are the core drivers that now prompt public health to respond with a strong business case?

Major changes in the health care delivery system

Unprecedented and rapidly evolving changes in the health care delivery system—not only in how health information is collected, used, and shared but also in new care delivery and payment models[2]—will continue to have profound impacts on population-based health improvement initiatives. Governmental public health agencies must understand these profound changes, understand the strengths and limitations of digital health information, and equip themselves with state-of-the-art information systems if they are to be effective partners with the health care system.

Ubiquitous use of information systems in the health care industry

In recent years, the rapid adoption of EHRs has surpassed the "tipping point" on the way to near universal EHR use. As a result, an unprecedented reservoir of digital health data is potentially available for use in health promotion and disease prevention. Several promising initiatives are underway, including the creation of an interoperability roadmap by the Office of the National Coordinator for Health Information Technology to guide future initiatives.[2] To be able to be more effective and credible in this fast-paced electronic health world, public health agencies must increase their sophistication in informatics.

Health protection from emerging health threats and emergencies

In the face of these changes in the health care delivery system, public health agencies will remain society's guardian in the face of emerging health threats and population-based health emergencies. Timely and accurate information is central both to detection of these threats and to the effective control of disease outbreaks. To address these and related needs, the Centers for Disease Control and Prevention (CDC) has recently developed a strategic plan to improve public health surveillance,[4] highlighting the need to focus on 4 priority public health information systems: notifiable disease reporting including electronic case reporting; electronic laboratory result reporting; electronic death record reporting; and syndromic surveillance. These initiatives hold promise for moving from older paper-based methods toward bidirectional data exchange.[5]

Health promotion to address chronic disease and injury risks

In addition to protection of the population from threats and emergencies, the public health enterprise is central to the fight against major preventable health problems such as tobacco use, obesity, and other chronic disease risk factors. Injury prevention programs and the prevention of occupational and environmentally caused illnesses and injuries also require access to timely and accurate information provided by public health information systems, including information on environmental risks such as lead in drinking water.

This driver is central to the need for sophisticated information systems that link hospitals with local public health agencies. Increasingly, health care delivery organizations will need to do case management, leverage community resources, and promote prevention as payment reform unfolds. The old system of fee for service will no longer work for hospitals to remain solvent. Increasingly, accountable care organizations will be depending on population-based services that prevent spiraling costs.

Public demands for timely and accurate information

As the public develops increasing interest in the practice of disease prevention and health promotion at both the individual and community levels, accurate and timely information related to health risks and outcomes will be desired. Policy makers, community-based organizations, and individuals must be able to access quality health information. If health agencies are to maintain credibility in the communities they serve, they must continue to advance the use of state-of-the-art health information systems that link social determinants of health to community needs.

Assumptions and guiding principles

Governmental public health agencies will continue to deliver Essential Public Health Services and be accountable for success

In the face of significant changes in the health care landscape over coming decades, the public will continue to expect that government will deliver the essential services of public health. Information on the essential services delivered by health agencies and the information systems that support service delivery are central to ensuring that the nation's public health infrastructure is sound.[6]

Public health agencies must become more "informatics savvy"

To address the challenges of the future and to develop the capabilities and capacity to serve as a central source

of population health information, health agencies must become more "informatics savvy." An informatics-savvy health department[7,8] contains: knowledgeable and decisive leadership with a clear vision and strategies for how the agency uses information and information systems; a skilled workforce; and well-designed and effectively used information systems.

A sound business case is needed to ensure ongoing investment in public health surveillance and information systems

A recent Institute of Medicine report on financing of the public health system raises major concerns and also delineates the need to improve approaches to financing the foundational capabilities of the public health system, which include information systems capability and capacity.[1]

Unfortunately, the patchwork approach to financing these information system investments complicates matters. To address these needs, decision makers throughout the health system need to be able to make a clear and compelling business case for these investments and be able to utilize a financing scheme that is sustainable for the long term. Development of a sound business case and better financing approaches will enable leaders to move their public health organizations toward the goal of becoming more "informatics savvy."

Benefits of better systems

There are numerous benefits of more timely and complete information and interoperable information systems including improved internal operations throughout the public health enterprise such as better day-to-day decision making, better information for strategic planning, and better process control and management.[9]

In addition to improving internal operations, better systems are needed for improved external partnerships with both the health care delivery system and other community partners. For example, automated surveillance systems for notifiable disease reporting can reduce burden (and expense) of cumbersome paper-based reporting, thereby freeing up health care providers to attend to the central tasks of patient care. Furthermore, public health agencies may be able to assist health care systems to communicate with communities that they serve as they expand into a more comprehensive approach to population health.

Furthermore, better information and information systems can improve the ability of state and local health agencies to deliver essential public health services, thereby enhancing their ability to respond to health threats and emergencies and also to promote population-based health. Increasingly, public health agencies aspire to becoming a community health integrator serving to tie together and build community health partnerships; robust information systems are needed if public health agencies are to achieve this goal.

How are existing investments being made?

Investments in information systems are made in a number of ways depending on the design of the system and the structure of existing funding arrangements.

Program-specific systems

Some information systems are designed to support a specific public health program. Ideally, these systems may combine disease surveillance functions with information that supports case management and other program operations. Immunization information systems are one of the most advanced surveillance systems in public health and are funded with CDC grants, Prevention and Public Health Funds (PPHF), some supplementation by state funds, and some HITECH-HIE Medicaid funds. Other public health programs (eg, tuberculosis and HIV control programs, as well as chronic disease prevention programs) have also developed information systems to support program operations; CDC grant funding also plays a central role in financing these information systems.

Information systems that serve multiple programs

Certain information system investments serve multiple public health programs. These include systems for notifiable disease reporting, electronic laboratory reporting, syndromic surveillance, electronic death record reporting, environmental monitoring, and certain surveys such as the Behavioral Risk Factor Surveillance Survey. Financing of these systems is supported by CDC grant funding, including the Epidemiology and Laboratory Capacity (ELC) grants and the Public Health Emergency Preparedness (PHEP) grants, and other state and local funding sources.

Information system infrastructure

Information systems managed by state health agencies require support for key system infrastructure (components such as, servers, networks, and security) that is often managed by the state's central information technology office. Often, state health agencies must pay a fee for support of infrastructure costs. These costs that are often for maintenance operations, minimal enhancements, and other improvements to existing systems which may not be an allowable expense under a CDC grant. If not, the state agency may be pressed to identify funds to pay those fees.

Risks of underinvesting

An essential part of developing a robust business case for investing in public health information systems is the delineation of risks of underinvesting. Central risks include failure to adequately detect and respond to public health threats and emergencies (eg, Zika virus disease) and ongoing public health threats (eg, HIV infection, hepatitis, and tuberculosis). Furthermore, the ability of public health to lead in the areas of chronic disease prevention, prevention of occupational illness and injury, and other preventable conditions is jeopardized if information system investment is inadequate. As the health care system looks to public health to enhance population health, failure to invest in information systems will result in missed opportunities for partnerships to improve the health of the populace and an ongoing reliance of inefficient or out-of-date workflows and processes.

Business case development

As public health agencies design, acquire, and develop new information systems, standard information system development processes should be followed such as the Systems Development Life Cycle (or IT lifecycle).[8] This process involves development of a business case as a central feature of the Initiation and Concept phase. Once the business case is developed and a project charter is developed and signed, the business case can be refined and expanded as use of the system tests and validates assumptions regarding true costs, added value, and tangible program benefits.

Policy considerations

Financing of information system development and operations remains a challenge even when a persuasive business case is created. Public health partners should continually examine policies that determine the flow of funding. These policies should enhance flexibility in the use of funding while ensuring accountability. Models exist in current CDC grants, as noted earlier (eg, ELC and PHEP), in which specific grant language has been developed to support information system development; these approaches could be extended to other CDC grant programs and other US Department of Health & Human Services agencies to expand the range of potential funding sources. Grant announcements could encourage development of a business case for an information system. Greater attention should be given to leveraging Centers for Medicare & Medicaid Services and state Medicaid funds,[10] which can provide support for information system development and operations and information exchange capabilities. Finally, when new major public health information systems are being developed (eg, electronic case reporting), dedicated funding should be identified at the outset, rather than relying on the strategy of "robbing Peter to pay Paul." In addition, funding for ongoing operations and enhancement should be identified.

Conclusion

Information and information systems are central to the business of public health. By developing a sound business case within the context of a strategic approach to building capacity, information systems can be developed to meet the emerging opportunities of the eHealth era.

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