

SECTION I

Overview

CHAPTER 1

Introduction to Public Health Communication and Informatics

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LEARNING OBJECTIVES

By the end of this chapter, the reader will be able to:

- Clarify the subfields of public health communication and informatics.
- Identify the competencies defined by the Association of Schools of Public Health (ASPH) in health communication and informatics.
- Explain how communication fits into the ecological model of public health and supports other public health objectives.
- Describe health communication as used by several government and international organizations.
- Understand the logic and sequence of this textbook.

INTRODUCTION

Communication and Informatics are broad areas with equally broad definitions. Please see **Box 1–1** for ours.

Box 1–1 Definitions^{1,2}

Communication: “How people use messages to generate meanings within and across various contexts, cultures, channels and media” (U.S. Department of Education).

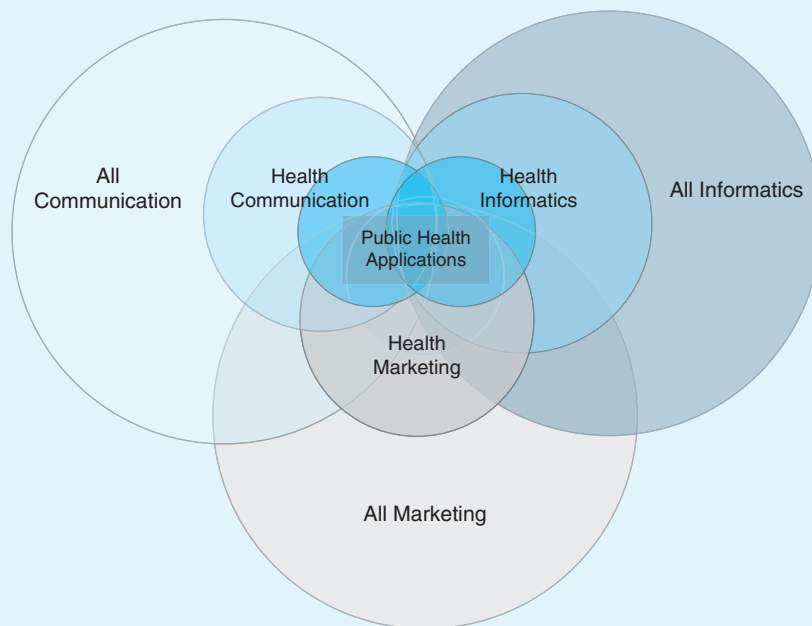
Informatics: “The effective organization, analysis, management, and use of information” (American Medical Informatics Association).

With the January 2009 inauguration of Barack Obama as the nation’s 44th president, *Newsweek* columnist Anna Quindlen voiced a widely held opinion that an “era of good speaking” had returned.³ Obama’s successful attainment of the presidency was in no small part due to his ability to articulate complicated ideas in a clear and persuasive manner. The ability to listen, speak, and write well remain among the top skills sought in virtually every field of employment, and are always among the KSAs (knowledge, skills, and abilities) requested of applicants for professional positions at the **Centers for Disease Control and Prevention (CDC)**.

But what makes **public health communication** different from the kind of training that most undergraduates receive, or that President Obama, for example, received as a lawyer? It is not so much the processes of developing arguments or being able to write an essay with a “beginning, middle, and an end.” The Department of Health and Human Services defined **health communication** as “the study and use of communication strategies to inform and influence individual and community decisions that enhance health.”⁴ Thus, the first difference is the focus on health. The second major difference is the use of “strategies to inform and influence . . . decisions.”

COMPETENCIES

What do these strategies look like? If you were figuratively flying over this book at 10,000 feet and looking down, you might see the “crop circle pattern” depicted in **Figure 1–1**. Thus, in order to be “outstanding in the field” of public health communication and informatics, there are huge domains of content for you to learn. They are constantly moving, shifting their overlap pattern, and engulfing other domains that seemed

FIGURE 1–1 The View from 10,000 Feet

unrelated only a few years ago. The basic foundation for the study of public health communication must be assembled from these shifting domains in order for the novice to begin what we think is a fascinating and rewarding career. This book is designed to help a newcomer aim for and land in the intersection of the nine circles you see in Figure 1–1. Put more directly, we aim to provide the reader with the tools necessary to begin mastering the competencies defined by the **Association of Schools of Public Health (ASPH)**. The **ASPH Core Competencies Development Model** listed the competencies necessary for graduates of master’s of public health (MPH) programs in health communication and informatics.

ASPH Core Competencies in Health Communication and Informatics

Like all the ASPH competencies, the ones for health communication and informatics emerged after a two-year modified Delphi process (see **Box 1–2**).

The core competencies shown in **Table 1–1** represent entry-level communication skills, defined as what a graduate from a public health program would be expected to be able to do on the first day of a job. John Finnegan, a noted health communication scholar and Dean of the School of Public Health, University of Minnesota, led the committee that selected and organized these competencies. He noted that, “We thought about separating the communication and informatics competencies, as each can stand alone. But, informatics is the infrastructure for public health in the 21st century the way that water and sanitation were for the 20th . . . the informatics platform will increasingly carry more to the public, but the content will continue to be dominated by communication theory. On this basis, we felt it was best to keep the domains together at this point in public health education.”²⁵

The Council on Linkages for Academia and Public Health has created more extensive competencies in health communication for practitioners at different administrative levels (see **Box 1–3**).

Box 1–2 Use of the Delphi Method for Health Communication Competencies

Named after the oracle of Delphi in ancient Greece, a “Delphi method” is a small-group research technique that seeks a consensus among experts through sequential rounds of data collection and reduction. The Rand Corporation takes credit for inventing the Delphi method. It is used when there is an insufficient evidence base to make a decision and/or when expert experience and opinion are considered valuable.

The common steps in the process include selecting a set of experts (usually at least 10 people, by tradition), and sending out an initial set of questions. These are usually items that can be ranked or scaled. In the case of the health communication and informatics competencies, the group began with a list of 76 possibilities. In the first round, task group members individually voted to (1) accept, (2) accept with changes, (3) reject, or (4) consider an alternative. They were given the second task of rewording an item if they deemed it acceptable with changes. Working in this manner, the taskforce reduced the list to 10 competencies through 3 Delphi rounds.*

Delphi is often used to rank a list of items in terms of priority. For example, Edward Maibach[†] and colleagues conducted a Delphi process on critical elements of social marketing. Published in 1997, it still serves as an important reference tool to define quality in social marketing.

*Calhoun, J.G., Ramiah, K., Weist, W.M., & Shortell, S.M. Development of a core competency model for the master of public health degree. *American Journal of Public Health* 98 (2008): 1598–1607.

[†]Maibach E., Shenker A., & Singer, S. Results of the Delphi survey. *Journal of Health Communication* 2, no. 4 (1997): 304–307.

In addition, ASPH is now working on competencies for doctoral-level public health graduates. This focus on competencies is based on the idea that on a human resource level, “quality in” (graduates possessing the health communication

competencies) may lead to “quality out” (effective state and local health communication programs). Table 1–1 presents the latest version of the ASPH core competencies for communication and informatics.

Box 1–3 Core Competencies for Public Health Professionals

Adopted May 3, 2010

Communication Skills for Mid-Level Professionals*

- Assesses the health literacy of populations served.
- Communicates in writing and orally, in person, and through electronic means, with linguistic and cultural proficiency.
- Solicits input from individuals and organizations.
- Uses a variety of approaches to disseminate public health information.[†]
- Presents demographic, statistical, programmatic, and scientific information for use by professional and lay audiences.
- Applies communication and group dynamic strategies[‡] in interactions with individuals and groups.

*Competencies apply to individuals who have earned an MPH or related degree and have at least five years of work experience in public health or a related field (combined pre- and post-master’s degree), or individuals who do not have an MPH or related degree but have at least 10 years of experience working in the public health field.

[†]Examples include social networks, media, blogs.

[‡]Examples include principled negotiation, conflict resolution, active listening, risk communication.

Source: Public Health Foundation, the Council on Linkages Between Academia and Public Health Practice. *Core Competencies for Public Health Professionals*. Retrieved August 18, 2010, from <http://www.phf.org/link/CCs-example-free-ADOPTED.pdf>

TABLE 1–1 MPH Core Competency Development Model: Version 2.3 (August 2006)**COMMUNICATION AND INFORMATICS**

The ability to collect, manage, and organize data to produce information and meaning that is exchanged by use of signs and symbols; to gather, process, and present information to different audiences in-person, through information technologies, or through media channels; and to strategically design the information and knowledge exchange process to achieve specific objectives.

Competencies: Upon graduation, it is increasingly important that a student with an MPH be able to . . .

1. Describe how the public health information infrastructure is used to collect, process, maintain, and disseminate data.
2. Describe how societal, organizational, and individual factors influence and are influenced by public health communications.
3. Discuss the influences of social, organizational, and individual factors on the use of information technology by end users.
4. Apply theory and strategy-based communication principles across different settings and audiences.
5. Apply legal and ethical principles to the use of information technology and resources in public health settings.
6. Collaborate with communication and informatics specialists in the process of design, implementation, and evaluation of public health programs.
7. Demonstrate effective written and oral skills for communicating with different audiences in the context of professional public health activities.
8. Use information technology to access, evaluate, and interpret public health data.
9. Use informatics methods and resources as strategic tools to promote public health.
10. Use informatics and communication methods to advocate for community public health programs and policies.

Source: The Association of Schools of Public Health, ASPH Education Committee. (2006). Master's Degree in Public Health Core Competency Development Model, version 2.3. Retrieved August 18, 2010, from <http://asph.org/userfiles/version2.3.pdf>

Competency Clusters

We start by reorganizing these competencies into their respective subdomains: primarily, health communication, primarily informatics, and shared competencies.

Competencies That Require More Training in Health Communication

- No. 2. Describe how societal, organizational, and individual factors influence and are influenced by public health communications.
- No. 4. Apply theory and strategy-based communication principles across different settings and audiences.
- No. 6. Collaborate with communication and informatics specialists in the process of design, implementation, and evaluation of public health programs.
- No. 7. Demonstrate effective written and oral skills for communicating with different audiences in the context of professional public health activities.

These skills are based on the mastering of theories and approaches to understand the “audiences” for health information and how their information seeking behavior, comprehension, and willingness to act are shaped by multiple factors. The audience may consist of one individual and require the applica-

tion of new “tailoring” technologies. Or, mass communication principles may be applied to reach out to an entire population. Again, the ubiquitous “oral and written communication” skills register here.

Competencies That Require More Training in Informatics

- No. 3. Discuss the influences of social, organizational, and individual factors on the use of information technology by end-users.
- No. 8. Use information technology to access, evaluate, and interpret public health data.
- No. 9. Use informatics methods and resources as strategic tools to promote public health.

These skills look at how health data originate, are stored, transmitted, presented and interpreted. True blue informatics practitioners have strong backgrounds in computer science, statistics, or information science, (e.g., anyone from librarians or database managers to Bill Gates). But public health communicators might be more engaged with the downstream use and interpretation of electronic records and with transforming rates, probabilities, graphs, and other data into useful information for various audiences and purposes.

Competencies That Are Shared

- No. 1. Describe how the public health information infrastructure is used to collect, process, maintain, and disseminate data.
- No. 5. Apply legal and ethical principles to the use of information technology and resources in public health settings.
- No. 10. Use informatics and communication methods to advocate for community public health programs and policies.

These competencies are used chiefly for work in the public arena to ensure that information resources are distributed fairly, ethically, and in support of public health.

How did we arrive at these competencies as the most important? A look at the history of the field of health communication provides some clues.

PUBLIC HEALTH COMMUNICATION: A BRIEF (AND SOMEWHAT PERSONAL) HISTORY

Communication scholars trace their origins to the study of rhetoric (persuasive speaking) by Plato and Aristotle; and journalism has been taught in the United States since the early 1900s. *Health* communication, however, is a relatively young field. Kreps, Bonagura, and Query⁶ trace its origins from the “humanistic psychology movement” beginning in 1950s associated with the work of Carl Rogers, Jurgen Ruesch, and Gregory Bateson. The 1960s and 1970s saw a convergence in the fields of psychology, medical sociology, and medicine that produced two distinct tracts in “proto-health communication,” healthcare delivery and health promotion. Healthcare delivery included research on the ways:

interpersonal and group communication influence healthcare delivery, (including) the provider/consumer relationship, therapeutic communication, healthcare teams, healthcare decision-making, and the provision of social support.⁷

In contrast, the health promotion branch grew out of the communication field’s long-time focus on media in communication and was concerned with “the development, implementation and evaluation of persuasive health communication campaigns to prevent major health risks and promote public health.” The International Communication Association renamed its Therapeutic Communication interest group, which had been formed in 1972, to the Health Communication Division in 1975. The National Communication Association took 10 years to form a health communication group in the United States. The gap in time between the creation of the international and national chapters reflects the earlier use of “social marketing” to achieve international development goals beginning in the late 1970s. Continuing through the 1980s,

the U.S. Agency for International Development (USAID) funded programs to bring this new, strategic approach to what was globally called *information, education, and communication* (IEC). USAID Programs such as “Population Communication Services,” “Social Marketing for Change,” and “HealthCom” applied lessons learned on Madison Avenue to family planning; child survival, and eventually to all aspects of health, agriculture, and environmental management.

Much of what we have learned about behavior change communication (BCC), which is the term preferred internationally, comes from these early endeavors led by the Academy for Educational Development, the Educational Development Center, Johns Hopkins University, Management Sciences for Health, Manoff International, Porter, Novelli & Associates, the Futures Group, and others, referred to lovingly as “beltway bandits.”* Few of the groundbreakers in international health communication published their work in the scientific literature. However, USAID has ensured that its contractors make their program materials and reports available, now on-line, and originally through project clearing-houses.

As a contractor to both USAID and the National Cancer Institute (NCI), William Novelli was one of the early drivers of social marketing in both international and national health communication. Under contract for a range of tasks with NCI, Novelli’s agency drafted the 1983 and 1985 publications, *Making P(ublic)S(ervice)A(nnouncement)s Work* and *A Handbook for Health Communication Professionals*. The “blue” and “purple” booklets might have been the first U.S. government publications to put forth a health communication program cycle based on a marketing process. NCI eventually combined these with additional material into what we now refer to as *The NCI Pink Book, Making Health Communication Programs Work*,⁸ the *de facto* bible for public health communication practice.

So, while scholars of health communication have noted that patient education predominated in the published literature prior to the advent of the journal *Health Communication* in 1989, (see Thomsson⁹; the truth is that a lot was happening in health communication, but not much was being published outside of *gray literature*[†]). Almost as a footnote, in 1997, the Public Health Education and Health Promotion section within the American Public Health Association formally recognized health communication as part of its group.

*Term refers to US 495, the circular highway around Washington, DC. Some of the best beltway bandits were/are actually based in Boston, North Carolina, New York, Seattle, etc.

†Gray literature refers to unpublished, or non-peer-reviewed, reports, usually undertaken for government agencies. Such reports are often highly accurate and authoritative. They are now more commonly available on program websites, or through various agency resources.

Institutionalization of Scientific Health Communication at the CDC¹⁰

In 1993, the director of the Centers for Disease Control and Prevention, William Roper, formalized the agency's definition of health communication as "the crafting and delivery of messages and strategies, based on consumer research, to promote the health of individuals and communities." The definition characterized the public as consumers whom agency staff needed to understand in order to serve. It also clarified the role of health communication at the CDC as not only providing information, but also working with the public as partners in prevention. Roper also listed three goals for integrating health communication into the internal management functions of the agency:

- Recognize the central role played by health communication in prevention and behavior change programs.
- Integrate marketing and communication considerations into program planning and design.
- Provide staff with sufficient training and technical assistance to manage programs of this nature.

In 1996, Vickie Freimuth was hired to integrate all public relations, media, and prevention communication oversight functions in the Director's Office of Communication (OC). Not long after Freimuth's departure in 2004, the CDC went through a reorganization that resulted in the creation of the National Center for Health Marketing for programmatic communication as distinct from enterprise (i.e., corporate) communication. But, as of this writing, CDC is reorganizing its communication functions once more.

Is Health Education Part of Health Communication, or Vice Versa?

While Freimuth was authorized and supported in creating an integrated office for all communication within the CDC, tensions still existed among programs and personnel who classified themselves as "health educators," "behavioral scientists," or even "scientific writers." In part, this was due to the CDC's kluge-like growth from being the federal focal point for health education in 1974. The National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), named that in 1988, had previous incarnations as the Bureau for Health Education incorporated within the Office of Smoking and Health. In other centers and division, CDC scientists focused on behavioral science, health promotion, or social marketing. Here are two examples.

The National Center for HIV, STD, and TB Prevention (NCHSTP) championed the use of behavior change theories in communication

strategies to influence high-risk behaviors . . . they legitimized the use of "behavioral epidemiology," allowing ethnographic and other qualitative research methods into the same room as quantitative techniques.

The chronic disease center (NCCDPHP) . . . innovate(ed) "behavioral surveillance," or counting how many people behave in ways to promote or undermine their health. They established the Behavioral Risk Factor Surveillance System (BRFSS) in 1984 to give states access to data on the numbers of deaths and magnitude of illness attributable to behavioral risks, such as poor nutrition, tobacco use, unprotected sex, and so on . . . the BRFSS "provides an ongoing mandate to communicate with the public about the state of their health and how it can be improved (through better health behavior)."¹¹

To sum up this history, in the late 1970s, USAID launched the use of social marketing to bring (helpful) products to what was then called the "Third World" and convince poor people to plan their families, rehydrate babies stricken with diarrhea, vaccinate against disease, plant green vegetables, etc. The National Institutes of Health (NIH), in particular NCI, adopted social marketing and embraced psychological theory. They were the first to use marketing tactics against the tobacco companies (who were viewed as particularly effective at capturing youth and other vulnerable audiences) as well as apply psychological principles to helping people quit smoking. The CDC made a huge move to apply these principles in HIV/AIDS programs. It integrated the social behavioral focus with a scientific approach to media communication and took the further step of demonstrating how communication fit and flowed with epidemiology.

The CDC Sequence for Health Communication

The CDC's sequence can be simplified as follows:

1. Collect and analyze data (surveillance and field epidemiology) to identify health problems and behavioral/environmental antecedents.
2. Develop communication strategies to modify behavior, modify behavioral antecedents, or lead to improved environmental conditions.
3. Evaluate to see if the communication strategies were effective at changing behavior or conditions.
4. Recollect and analyze health data to measure health outcomes.
5. Repeat step 2–4, if necessary.

It is this *integrated cycle* of health data collection, interpretation, and communication that this textbook will feature as

“public health communication.” To some extent, the CDC’s model of health communication has always embraced informatics as its *alpha* and *omega*. What is different now is that we will also discuss some media strategies that use an informatics platform to create or deliver a health communication intervention.

THE LIMITATIONS OF HEALTH COMMUNICATION

While the CDC and other government agencies have raised health communication to a science, it alone cannot change the face of public health. There are tremendous human and material resources required to keep our water, air, and food clean and healthy, and keep infectious diseases at bay. The U.S. public has come to expect and rely upon a low risk health environment. Rare exceptions make the news—the appearance of a new flu virus (H1N1), the discovery of anthrax in an envelope, or the recall of hamburger meat due to *e coli* infection. But, with healthy conditions, and an active public health workforce, how can we have the highest **infant mortality rate (IMR)** of any developed country? The international ranking in infant mortality for the United States fell from 12th in the world in 1960 to 30th in 2005, where it has remained.¹²

Our infant mortality rate is indicative of the challenges we face in public health communication. In order for the IMR to decrease, environmental conditions, service delivery, and individual behavior would all have to be modified. Similarly, our rates of preventable chronic disease, unintentional injury, sexually transmitted disease, or uninsured children all speak to

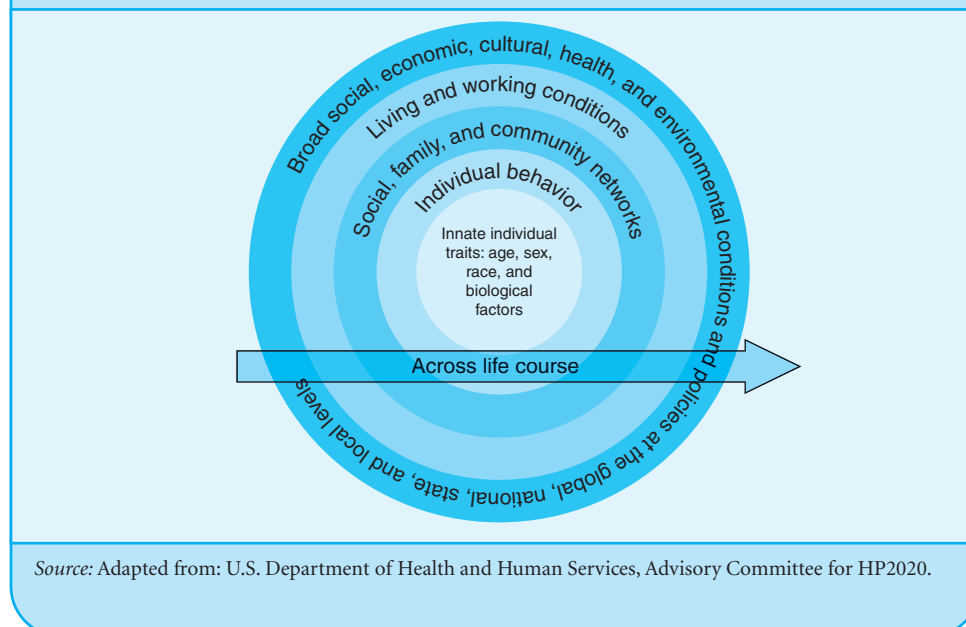
the limitations of public health communication alone to influence the complex system we portray as the ecological model of public health.¹³ Yet, health communication flows in and around every layer of the **ecological model** (see **Figure 1–2**).

THE ECOLOGICAL MODEL

According to the Institute of Medicine (IOM) committee charged with developing recommendations for public health education, understanding the ecological model and using an ecological approach is necessary for all public health practitioners. They write,

The ecological model assumes that health and well-being are affected by *interaction* among multiple determinants including biology, behavior, and the environment. Interaction unfolds over the life course of individuals, families, and communities . . . An ecological *approach* to health is one in which multiple strategies are developed to impact determinants of health relevant to the desired health outcomes. For example, an ecological approach to the reduction of tobacco use would include alteration in physical environment (smoke-free workplaces and public places), alteration in social environment (social marketing of tobacco prevention as a priority), and individual behavior change (smoking cessation classes).¹⁴

FIGURE 1–2 An Ecological Model



Source: Adapted from: U.S. Department of Health and Human Services, Advisory Committee for HP2020.

Public health practitioners frequently use a river or stream analogy to refer to the point of entry for an intervention. The source, or “upstream,” is considered the broadest or earliest point of entry, while interventions that attempt to modify conditions for individuals are considered the narrowest or latest point of entry, or “downstream.” There are parables that go along with this analogy, including whether it makes more sense to rescue drowning people out of a river one by one, or prevent them from falling (or being pushed) in in the first place. **Figure 1–3** features a poster from an international organization attempting to improve water globally, with the clear visual statement that pollution dumped into the water upstream will end up in a

child’s mouth downstream if we are not careful. The April 20th 2010 explosion of the British Petroleum oil drilling rig in the Gulf of Mexico is a tragic example of a truly “upstream” source of pollution that must now be dealt with through massive clean up efforts. Environmental advocacy efforts to provide more safeguards for off-shore drilling could have prevented it if heard, and acted on, by Congress.

Health communication alone cannot change some upstream (systemic) determinants of poor health, such as an oil spill, or poor social environment, limited healthcare resources, and poverty. But while health communication is not all-powerful, our responsibilities run deeper than we might think. If the individuals who need critical information to protect their health are not seeking or receiving it, understanding it, or being moved to action, we can use health communication to change this. If policymakers who determine national and local services have not received crucial health information, or been moved by it to action, we can use policy advocacy to effect change. An ecological approach to public health communication requires that all factors affecting a particular health condition are explored, and that an effort is made to change the upstream factors while helping individuals achieve the best health outcomes within their control. This is an ethical and professional principle that many practitioners embrace, but for some, their ability to conduct upstream advocacy may be constrained by political forces or regulations.

Health communication strategies can be organized in terms of their relative utility within each level of the ecological model. Some approaches are more effective at influencing the outer (or upstream) layers of the model, including the policymakers who develop regulations or implement programs that provide resources to communities and individuals. Other processes are more effective downstream by influencing community dynamics or facilitating individual behavior change. Several researchers have developed conceptual models for organizing systems-based approaches to health communication. These are discussed in Chapter 2. Now we look at one final model for what health communications is meant to achieve: the **hierarchy of effects**.

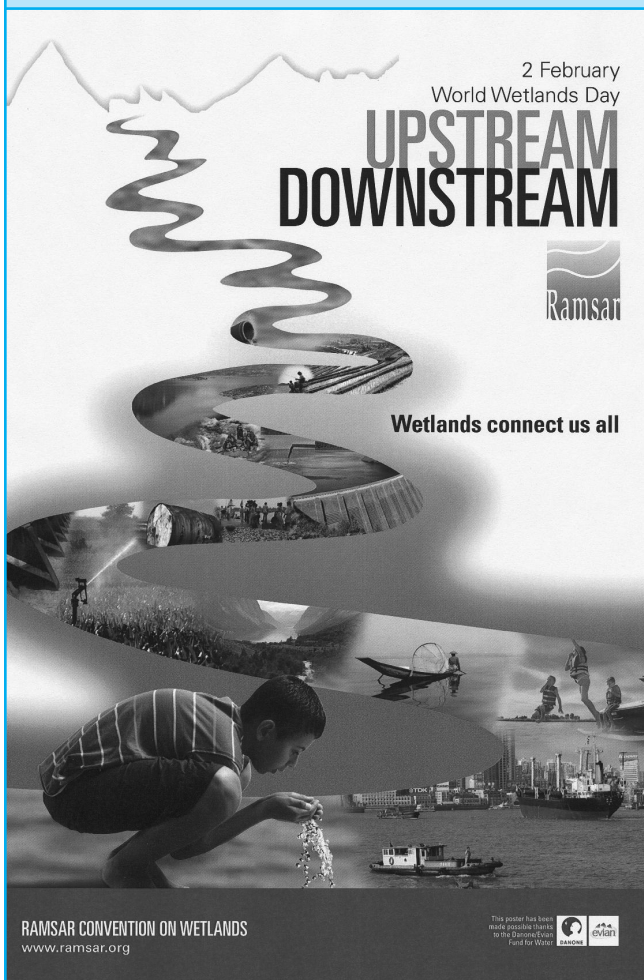
HIERARCHY OF EFFECTS MODEL

A final way of looking at our job is through the results we might expect of our efforts. In 1961, Lavidge (a marketer) and Steiner (a psychologist) wrote a pithy article on what advertising was meant to accomplish on the way up to and including actual sales. They outlined six steps moving a potential customer through the cognitive* domains of awareness and knowledge, the affective† domains of liking and preference,

*Cognitive: how you think.

†Affective: how you feel.

FIGURE 1–3 The Ecology of Health Is Like a Stream



Source: Ramsar Convention on Wetlands. www.ramsar.org

and the decision-to-action domains (“conative,” in their parlance) of conviction and purchase. They suggested not only potential advertising vehicles (e.g., sky writing and jingles to create awareness; status and glamour appeals for preference; point-of-purchase for desire to purchase), but market research tools appropriate to each step.¹⁵ The advertising world somehow kept this secret until the 1980s, when McGuire, a social psychologist, first adapted this marketing and advertising model, the Hierarchy of Effects (HOE) Model, to public health communication campaigns.¹⁶

With a “source” sending information out to a “receiver,” the lower-level effects McGuire sought were exposure, attention, interest, and comprehension. A higher order set of effects included acquisition of skills, changes in attitude, short-term retention of information, long-term retention, decision making, one-time performance of a behavior, reinforcement of the behavior, and maintenance of the behavior indefinitely through complex life changes.

Neither the stepwise nature of these effects, nor the relative difficulty of obtaining them, has been the subject of definitive research. However, in practice, many communication programs realized their resources were only sufficient to attain the lower level of effects in the hierarchy. Too many programs did not even achieve adequate exposure to expect any higher order effects—and none were there. It is the post hoc analysis of failed campaigns that has given the HOE considerable credibility. But, failures are rarely reported in the literature. Recently, communications researchers have modified McGuire’s steps for program planning and evaluation purposes. McGuire’s theory remains a very practical one, and should be credited along with its predecessor for spawning several stage-based and hierarchical models of how people process and act on information they receive.

PUBLIC HEALTH INFORMATICS

The term **informatics**, like communication, can have a very broad definition that encompasses any collection, storage, retrieval, and dissemination of any information anywhere. The Ten Commandments, the Library of Medicine, telemarketing, *EpiX*,* Google, and even your cell phone are all based on informatics principles that have contributed to their development.

The CDC published a clear definition of public health informatics in its 2005 call to create centers of excellence for the field. The funding announcement stated, “Public health in-

formatics is defined as the systematic application of information and computer science and technology to public health practice, research, and learning.”¹⁷ The CDC has created five centers of excellence in public health informatics with a focus on (1) electronic health record support of public health functions; (2) use of healthcare, population, and other public health data in supporting public health systems and analyses; (3) basic capabilities that support public health practice such as statistical and health surveillance; and (4) public health decision support.¹⁸

With its origins in public health surveillance systems, “notifiable” diseases, and cancer registries, public health informatics has staked out a population focus in comparison to the healthcare informatics focus on individual medical records. But, the twain meet more often than their pre-Internet progenitors. For example, the creation and multiple uses for a **personal health record** are becoming increasingly popular in all medical care applications, including those provided through publically managed facilities.

The National Center for Public Health Informatics at the CDC manages a number of projects that demonstrate the multiple applications of informatics in public health. The projects and a brief description appear in **Box 1–4**.

Throughout the book we focus on how health communicators access and use databases, survey results, visual representations of data, and digital applications to facilitate health communication tasks.

PUBLIC HEALTH COMMUNICATION AS A JOB: INFORM, EDUCATE, AND EMPOWER

A General Overview

To understand the scope of employment in public health it may help to review the duties for what is arguably the top job in public health communication, the office of the Surgeon General. **Figure 1–4** pictures Vice Admiral Regina M. Benjamin, MD, MBA, Surgeon General, appointed by President Obama. The Surgeon General is appointed by the President of the United States with the advice and consent of the United States Senate for a 4-year term of office.

The **Surgeon General**, in popular mythology, is supposed to be the “Nation’s Doctor.” More so than administering to the sick, the Surgeon General is meant to keep the public well—and the primary instrument is health communication (see **Box 1–5**).

While the Surgeon General has administrative oversight of the uniformed branch of the U.S. Public Health Service, the position’s first five duties describe much of the field of public health communication. The Surgeon General must: “*educate* the public,” “*advocate* for effective disease prevention and

**EpiX* is the Centers for Disease Control and Prevention’s Web-based communications system with state and local health departments, poison control centers, and other public health professionals to access and share preliminary health surveillance information.

Box 1–4 Public Health Informatics Projects at CDC

The National Center for Public Health Informatics at CDC sponsors numerous projects that define the state of the art of public health informatics. The overarching program is the Public Health Information Network (PHIN), a national initiative to improve the capacity of public health to use and exchange information electronically by promoting the use of standards and defining functional and technical requirements.

Four projects are featured here from the CDC website, although several others are also described on the site:

<http://www.cdc.gov/ncphi/programs-projects.html#cert>

- ✓ Assessment Initiative
- ✓ Biosurveillance
 - Communities of Practice
 - Directory, Alerting, and Emergency Operations
- ✓ Electronic Health Records
 - External Workforce Development
 - Knowledge Management
 - Laboratory Systems
 - National Notifiable Disease Surveillance
 - Outbreak Management
 - PHIN Certification
- ✓ Vocabulary/Messaging Standards
 - Global Public Health Informatics

Assessment Initiative

Beginning in 1992 and now in its third 5-year funding cycle, the *Assessment Initiative* is a cooperative program between the CDC and state health departments that supports the development of innovative systems and methods to improve the way data are used to provide information for public health decisions and policy. Through the Assessment Initiative, funded states work together with local health jurisdictions and communities to improve access to data; to improve skills to accurately interpret and understand data; and to improve use of the data so that assessment findings ultimately drive public health program and policy decisions.

The Assessment Initiative supports work in two main focus areas:

- *Community health assessment practice.* Development, implementation, and evaluation of tools, strategies, and approaches to improve the capacity of local public health agencies and communities to conduct effective community health assessments, and demonstrate how the resulting data have been used to affect public health programs and policies.
- *Data dissemination systems.* Implementation of electronic systems for user-friendly analysis and dissemination of public health data (i.e., Internet-based interactive data query systems) and evaluation of the effect of these systems on primary users.

Biosurveillance

The *BioSense* Program goal is to support a national surveillance network through which healthcare organizations, public health, health information exchanges (HIEs), and other national health data sources are able to contribute to the picture of the health of the nation. To achieve its goal, the BioSense program facilitates activity in three areas:

- Local and state public health coordination of data for surveillance.
- Collaboration with partners to develop the workforce.
- Advances in science and technology.

Currently BioSense supports more than 800 registered users; connects with more than 570 hospitals; receives an average of 175,000 near-real-time messages per hour; receives data from more than 1,300 Department of Defense and Veterans Affairs hospitals and healthcare facilities; and receives laboratory data from LabCorp and RelayHealth.

continues

Electronic Health Records

The purpose of the *Electronic Health Records* project is to leverage opportunities created through the increased use in electronic medical records (EMR) systems in healthcare organizations by creating the ability to send actionable public health alerts that can be consumed and distributed by an EMR system. This project explores extending the capability to communicate with EMR systems using a standard messaging format to create actionable alerts that will be delivered to the provider only when applicable to a current patient's situation. By offering a targeted method of delivery, the project aims to avoid alert fatigue. A feedback mechanism will also be included to capture the provider's response to the alert and further improve the effectiveness of the message.

Vocabulary/Messaging Standards

PHIN (Public Health Information Network, CDC) *Vocabulary Standards* is a key component in supporting the development and deployment of standards-based public health information systems. PHIN Vocabulary Services seeks to promote the use of standards-based vocabulary within PHIN systems and foster the use and exchange of consistent information among public health partners. The use of PHIN Vocabulary Standards ensures that vocabularies are aligned with PHIN standards and with appropriate industry and Consolidated Health Informatics Initiative (CHI) vocabulary standards. These standards are supported by the PHIN Vocabulary Access and Distribution System (VADS) for accessing, searching, and distributing standards-based vocabularies used within PHIN to local, state, and national PHIN partners. It promotes the use of standards-based vocabulary within PHIN systems to support the exchange of consistent information among public health partners.

FIGURE 1–4 Vice Admiral Regina M. Benjamin, MD, MBA, Surgeon General



Source: <http://www.surgeongeneral.gov/about/biographies/biosg.html>

Box 1–5 Duties of the Surgeon General

According to the Department of Health and Human Services, Office of the Surgeon General, the duties of the Surgeon General are to:

- Protect and advance the health of the Nation through educating the public, advocating for effective disease prevention and health promotion programs and activities, and, providing a highly recognized symbol of national commitment to protecting and improving the public's health
- Articulate scientifically based health policy analysis and advice to the President and the Secretary of Health and Human Services (HHS) on the full range of critical public health, medical, and health system issues facing the Nation
- Provide leadership in promoting special Departmental health initiatives, e.g., tobacco and HIV prevention efforts, with other governmental and non-governmental entities, both domestically and internationally
- Administer the U.S. Public Health Service (PHS) Commissioned Corps, which is a uniquely expert, diverse, flexible, and committed career force of public health professionals who can respond to both current and long-term health needs of the Nation,
- Provide leadership and management oversight for PHS Commissioned Corps involvement in Departmental emergency preparedness and response activities
- Elevate the quality of public health practice in the professional disciplines through the advancement of appropriate standards and research priorities and
- Fulfill statutory and customary Departmental representational functions on a wide variety of Federal boards and governing bodies of non-Federal health organizations, including the Board of Regents of the Uniformed Services University of the Health Sciences, the National Library of Medicine, the Armed Forces Institute of Pathology, the Association of Military Surgeons of the United States, and the American Medical Association.

Source: <http://www.surgeongeneral.gov/about/duties/index.html>. (Accessed November 3, 2009.)

health promotion programs,” “provide a highly recognized *symbol* of national commitment” to the nation’s health, “*articulate . . . health policy* analysis and advice to the President and the Secretary of HHS,” and “provide *leadership in promoting* special . . . health initiatives, e.g., tobacco and HIV prevention . . . both domestically and internationally.” The job is an embodiment of public health communication, although not all of its incumbents have been as successful as Dr. C. Everett Koop (Reagan administration) and Dr. Luther L. Terry (Kennedy administration) in focusing the public’s attention on critical health issues.

An Essential Public Health Service

Communication is an integral part of virtually every aspect of public health service delivery, and its *outcome* of informing, educating, and empowering people is considered an “essential public health service” in itself, in addition to cross-cutting all the other public health services. **Table 1–2** captures some of the current definitions and functions of health communication,

marketing, and informatics in public health today. This book has been organized to correspond to the tasks of informing, educating, and empowering, as well as persuading the public to act in its best interests.

THE LOGIC OF THIS TEXTBOOK

This book is divided into four major sections:

Section One: Overview. Chapters 1, 2, and 3 provide an overview of public health communications, the planning, and informatics.

Section Two: Informing and Educating People about Health Issues. Chapters 4 through 7 describe communication challenges and methods to provide information in a clear and unbiased manner. We focus particularly on translating data into information for different audiences. Section Two concludes with a summary of tips culled from the previous chapters, presented as Chapter 7, Appendix A.

Section Three: Being Persuasive: Influencing People to Adopt Healthy Behavior. Chapters 8 through 12 present theories,

TABLE 1–2 Communication, Marketing, and Informatics in Public Health**Description of the Job of the Surgeon General**

The Surgeon General serves as America's chief health educator by providing Americans the best scientific information available on how to improve their health and reduce the risk of illness and injury.

Health Marketing, CDC Definition

Health Marketing involves *creating, communicating, and delivering* health information and interventions using customer-centered and science-based strategies to protect and promote the health of diverse populations.

The National Center for Public Health Informatics (NCPHI), CDC

NCPHI protects and improves the public's health through discovery, innovation, and service in health information technology and informatics. Informatics can be defined as the collection, classification, storage, retrieval, and dissemination of recorded knowledge. Public health informatics can be defined as the systematic application of information and computer science and technology to public health practice, research, and learning.

National Cancer Institute, Health Communication and Informatics Research Branch

Providing communication leadership across the cancer continuum

Mission Statement: From primary prevention to survivorship and end-of-life care, and all points in between, communication plays a vital role in reducing the burden of cancer. The mission of the Health Communication and Informatics Research Branch is to contribute to the reduction in death and suffering due to cancer by supporting research and development of a seamless health communication and informatics infrastructure. Through internal and extramural programs, the Branch supports basic and translational research across the cancer continuum that will benefit consumers, patients, caregivers and healthcare professionals; from prevention to treatment, through survivorship, and end of life.

National Public Health Practice Standards Program, CDC

Essential Public Health Service #3: Inform, educate, and empower people about health issues. At the local, state, and governance level, this means:

- Health information, health education, and health promotion activities designed to reduce health risk and promote better health.
- Health communication plans and activities such as media advocacy and social marketing.
- Accessible health information and educational resources.

Health education and health promotion program partnerships with schools, faith communities, work sites, personal care providers, and others to implement and reinforce health promotion programs and messages.

Global Public Health Examples

The Communication Initiative (CI) network is an online space for sharing the experiences of, and building bridges between, the people and organisations engaged in or supporting communication as a fundamental strategy for economic and social development and change. It does this through a process of initiating dialogue and debate and giving the network a stronger, more representative and informed voice with which to advance the use and improve the impact of communication for development. This process is supported by web-based resources of summarised information and several electronic publications, as well as online research, review, and discussion platforms providing insight into communication for development experiences.

The Health Communication Partnership (A project of USAID)

Strategic communication for a health competent society.

Communication domains: The Social and Political Environment, Service Delivery Systems, and Health Literate Communities and Individuals.

planning models, and examples of effective strategies for influencing groups of people to adopt healthy behaviors. Everything we said in Section Two applies to Section Three, but persuasive communication adds several layers of complexity to the already challenging task of shaping and disseminating information so that people receive it, understand it, and can act on it. Chapter 13 pulls everything together into an implementation plan, and Chapter 14 describes evaluation of health communication programs.

Section Four: Special Contexts. Chapters 15 and 16 provide snapshots of patient–healthcare provider communication as well as emergency risk communication, respectively. These two circumstances bring unique challenges, as well as tested methods, to public health communication.

Throughout the book you will see boxes featuring examples of exciting research, programs, and resources. These are placed where they make the most sense, but can be read somewhat independently of the chapter material.

CONCLUSION

The fields of health communication and informatics overlap extensively, and public health practitioners have to build skills in both areas to be competent. Through ongoing consultation, the key U.S. public health agencies have developed guidance to help students, and eventually professionals, plan their acquisition of competencies. The goal is a high level of uniform com-

petencies for graduates of public health programs as well as standards of practice for public health agencies at all levels. The competencies are derived from models and theories of how individuals, groups, and societies access, understand, and react to health information. Some of the theories are based on psychological models of individual behavior change; others are based on societal mechanics such as politics and law. Practitioners need to have these tools to contribute to the health promotion and disease prevention objectives we set as a nation. On a global basis, a consensus on objectives and competencies is underway. It is very similar to our national recommendations.

KEY TERMS

- ASPH Core Competencies Model
- Association of Schools of Public Health (ASPH)
- Centers for Disease Control and Prevention (CDC)
- Ecological model
- Health communication
- Hierarchy of effects
- Infant mortality rate (IMR)
- Informatics
- NCI Pink Book
- Personal health records
- Public health communication
- Surgeon General



Chapter Questions

1. What distinguishes health communication from everyday communication?
2. Which of the health communication and informatics competencies identified by ASPH do you believe would be needed your first day on the job? Which do you think might be the most difficult to acquire?
3. What is the CDC's approach to health communication?
4. Provide examples of how communication is part of interventions designed to affect different layers of the ecological model.
5. Describe how health communication is used by several government and international organizations.

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