THE INTERNET IN SERVICE TO PUBLIC HEALTH:
A BRIEF REVIEW

by

Mary Patricia Metcalf

6 April 2005

A Master’s paper submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Public Health in the School of Public Health, Public Health Leadership Program.

Approved by:

[Signature]
Content Reader: Karen Rossie, DMD, PhD

[Signature]
Second Reader: William Williamson, MPH
The Internet In Service to Public Health: A Brief Review

Abstract
Since 1994 the Internet has grown into an information source that reaches out to audiences in ways that traditional print media never did, passes information around the globe in seconds, and connects individuals and information with an ease that seemed unimaginable in prior years. This phenomenon has led to the rise of "e-health" – the merger of technology and health related topics. This paper discusses how the Internet as a form of population health technology has benefited four of the ten essential services of public health. Use of Internet technology has had the most dramatic influence on the services to: inform, educate and empower people about health issues (#3), diagnose and investigate health problems and health hazards in the community (#2), assure a competent public health and personal health care workforce (#8), and research for new insights and innovative solutions to health problems (#10) (Public Health Function Steering Committee). In each of these areas the increase is easily accessible, widely available information and access has increased the efficiency with which public health functions.
The Internet In Service to Public Health: A Brief Review

Since 1994 the Internet has grown from an intellectual curiosity that a few techno geeks used to discuss Star Wars, to the “in” medium for communication. It has become an information source that reaches out to audiences in ways that traditional print media never did, passes information around the globe in seconds, and connects individuals and information with an ease that would have seemed unimaginable in prior times. This phenomenon has led to the rise of “e-health” — the merger of technology and health related topics. The Internet is one aspect of this larger field, which also includes palm computers, cell phones, and other “wired” devices. The phrase “population health technology” has been coined to discuss how all the “wired” technologies of the new millennium are intersecting with public health (Eysenbach 2003), yet there is no clear consensus of how “e public health” differs from “e health”. This paper looks specifically at how the Internet is being used to advance four of the ten essential services of public health.

The Pew Internet and American Life Project suggests that 128 million Americans have been on the Internet -- with 70 million adults using the Internet on any given day (Rainie and Horrigan 2005: 58). Not only are more individuals using the Internet than five years ago, but most US adults are using the Internet more often (Harris Interactive 2004). Most common uses (often or very often) according to a Harris Interactive online poll are emailing (66%), researching information (46%), reading news and updates (43%), and finding information on: travel (26%), hobbies/interests (40%), product and services (38%), local areas (22%) and health or diseases (21%) (Harris Interactive 2004). Some 7 million people look for health or medical information each day, for a total of 93 million who have “ever” looked for this information (Rainie and Horrigan 2005:58).
WHAT IS E-HEALTH?

A recent paper from the *Journal of Medical Internet Research* analyzed fifty-one definitions of “e-health”, “ehealth” or “electronic health” (Oh, Rizo, and Jadad 2005). From this work it is clear that “e-health” in all its permutations is most often concerned with the delivery of health care or health services. This stands in interesting contrast to the high number of consumers who use the Internet for health information and research about disease and health topics, rather than as a formal part of their health care delivery process. In fact, most studies show that care providers do not communicate with those they care for directly over the Internet—only 21% do (Lichtenstein and Peters 2002). Thus, there appear to be two separate domains of “health” on the Internet—that of the consumer or member of the public, and that of the professional. There is little dialog or two-way communication between the two at the present time.

Areas that are included in “e-health” include

- Telehealth (distance interviewing, reading x-rays, etc)
- Provider/patient email
- Information about the care delivery system
- Medical informatics—medical records, databases, data mining
- Health communication, health information, and health education
- Medical education and professional health education
- Professional publishing and data research
- Health and disease management (including surveys, monitors, and other tools)
- Health and disease treatment (online support groups, physician/pt communication, other care provider communication)
- Commerce—devices, drugs, publications, etc
- Information collection, storage and manipulation other than medical records, such as disease registries, online surveys, early-warning and alert systems

E-PUBLIC HEALTH VERSUS "E-HEALTH"?

There is little sense of “e-public health” *per se*. Only one of the 51 definitions assessed by Oh et al (2005) included the phrase “public health”; only five included concepts related to “health” as a state of well being as opposed to as a disease oriented manner. It seems public health on the
Internet suffers from the same challenges of self-definition that it suffers “on the ground” — the pervasive sense in the United States that health relates primarily to disease response and cure, rather than prevention and well-being. While consumer oriented material relevant to health prevention and well-being is increasing, the vast majority of public health related material on the Internet is disease-related, with a particularly strong leaning towards infectious and chronic disease.

Our current understanding of the Internet and “e-health” is focused on charting the behaviors of individuals — and amalgamating these into statements about groups and group behavior. From there, one makes the leap to the population as a whole. In this way, understanding the Internet from the population based perspective of public health will always be risky. There is not currently a widely accepted concept of the “good of the population” in terms of what is communicated over this information and communication highway.

Public health as a field has a role in providing information on the Internet, in using the Internet as a policy communication and shaping medium, and in addressing new policy issues related to health and well-being that the increasing popularity and reach of the Internet has created.

HOW DO PUBLIC HEALTH ORGANIZATIONS FIT INTO THE “E-HEALTH” WORLD?

The *Ten Years Ten Trends* report indicates that Internet has substantially changed how communication happens in the US (USC 2004). Of particular note to public health as a field is that consumers are now looking towards reliable, authoritative institutions, such as governments and other major organizations to provide accurate and up-to-date information. Thus, the mission of agencies such as CDC and NIH must now include public information via the Internet. In fact, according the *Ten Years Ten Trends* report, use of these sorts of websites (government, authoritative) is increasing, while traditional media use is decreasing. This trend has particular
relevance for public health in terms of consumer education in general, and with relation to disaster information and outbreak info dissemination to the public.

PUBLIC HEALTH’S PUBLIC PRESENCE ON THE INTERNET

One of the primary uses for the Internet is a way for public health organizations to communicate with those they serve. From the World Health Organization and Centers for Disease Control to national, state and local public health agencies to advocacy groups and non-profit issue groups the Internet can be used as a means of communicating a consistent message to a broad audience (see sample web pages in Figure 1 and Figure 2). In the past 10 years, this aspect of the Internet has increased the public's access to all kinds of information, including health related topics. It has been suggested that the need to provide “digital” government to the public will represent a particular challenge to public health agencies due to low funding of technology and access issues (Fountain 2005). However, examination of public health agencies reveals that these agencies in general have taken advantage of the opportunity to present their messages and missions to a much wider audience than they could in the past.

The use of the Internet is not restricted to one directional communication from agency to public, however. In fact, this may be one of the more mundane uses of the Internet for public health, since much of what public health agencies do simply mirrors what other groups are doing – communicating their message to the Internet audience.

Each Federal Agency has a significant presence on the Internet, with public health agencies including details on their mission, leadership, organizational structure, and content for consumers and professionals. The Centers for Disease Control website, www.cdc.gov is a typical example (Figure 2). The home page is primarily consumer or public oriented with prevention information, updates about current disease topics in the news, current programs and campaigns, and conferences.
Saving the lives of mothers and children

7 April 2005 -- Marking World Health Day, WHO today launched The world health report, which calls for greater access to life-saving interventions and a "continuum of care" approach to start before pregnancy and extend into the baby's childhood. Every year 10.6 million children die before the age of five, and over half a million women die in pregnancy or childbirth.

Great expectations babies six weeks old

15 April 2005 -- Six weeks after birth, this fifth part of "Great expectations" finds the mothers and babies healthy and happy. These ongoing photo stories are part of a global effort to raise awareness of maternal and child health -- the theme of World Health Day on 7 April.

6 April 2005

WHO report calls for new approach to save lives of mothers and children

FEATURES

Great expectations

When a baby is born, the world health report calls for a "continuum of care" approach to start before pregnancy and extend into the baby's childhood. This approach, in addition to other strategies, could save every fifth child before the age of five. ....

JHEALTH OUTBREAKS

Marburg haemorrhagic fever

Angola - update 8

Full text

Cholera

Senegal - update 2

Full text

Marburg haemorrhagic fever

Angola - update 8

Full text

DISEASE OUTBREAKS

Marburg haemorrhagic fever

Angola - update 9

Full text

Tsunami

Three months after the earthquake and tsunami

Health action in crisis

EMERGENCIES

World Health Organization

News releases | Features

11 April 2005

Narburg haemorrhagic fever

Latest information

Video

Great expectations [streaming video]

Interview

Fighting the "silent epidemic"

Ask the expert

Why do so many women still die in childbirth?

What are the biggest killers of children?
The left navigation bar holds links to ongoing themes and organizational information, such as health and safety topics, publications and products, and data and statistics. Other links will take the curious to agency management information (press releases, employment, etc). The use of email links allows members of the public to contact a federal employee with a mind boggling ease to those who remember the days before email (getting an answer may still be a challenge though!).

For some agencies, such as CDC, a public outreach has always been part of the mission, however, for institutions such as HHS, this represents a subtle but significant change in how resources must be allocated. For example, the HHS has chosen to outsource some of its health information distribution to the private company WebMD (see HHS 5/19/04), rather than disseminate materials on an agency-by-agency basis. This allows the HHS to provide information to the public audience without increasing the burden on it’s own technology infrastructure. Many of the individual institutes continue to have significant health information/education work of their own (National Cancer Institute’s Cancer.gov is an excellent example; Figure 3).

Other websites of interest to those in the public health field include those of the major organizations such as NIH, World Health Organization, etc. State and local agencies also have websites with consumer content and organizational material, such as Virginia’s www.vdh.state.va.us, with “health headlines”, health topics (some created as early as 1996), statistics, and links to local health districts (Figure 4).

International agencies and agencies in other countries can be reached through their websites, from the World Health Organization or United Nations to the Republic of the Philippines. A rather long list of links to national and international government and NGO websites can be found at the Rollins School of Public Health “Public Health Info Links” or “PHIL” to which the interest reader is referred (http://www.sph.emory.edu/PHIL.php; Figure 5).
State Board Of Health Adopts Chronic Disease Prevention And Control As It's Top Priority

March 31, 2005
(Richmond, Va.)—The Virginia Board of Health has announced that the prevention and control of chronic disease, such as cancer, heart disease and diabetes, will be its top priority. The Board has formally issued a set of public policy goals and objectives to help combat chronic disease in Virginia.

Are you, or someone you know, having problems affording the medicines prescribed by your doctor? Many companies that make commonly prescribed medicines have Prescription Assistance Programs, through which qualifying patients (or their doctors) receive medicines at low or no cost. For more information visit the Prescription Assistance Programs Web site or call our hotline at 1-866-531-3065.

New Together Rx Access™ card offers Americans with no prescription drug coverage savings at the pharmacy counter.

• Virginia Freedom of Information Act Rights and Responsibilities
• Own Your Future Virginia's Long Term Care Awareness Campaign

Figure 5
Home page of the National Cancer Institute

Eliminating the suffering and death due to cancer.

Types of Cancer
- Common Cancer Types
  - Bladder Cancer
  - Breast Cancer
  - Colon and Rectal Cancer
  - Endometrial Cancer
  - Kidney Cancer (Renal Cell)
  - Leukemia
  - Lung Cancer
  - Melanoma
  - Non-Hodgkin's Lymphoma
- Pancreatic Cancer
- Prostate Cancer
- Skin Cancer (non-melanoma)
- Thoracic Cancer

Clinical Trials
- Finding Clinical Trials
- Clinical Trial Results
- Learning About Clinical Trials
- Let's Talk in NCI's PDQ®

Cancer Topics
- Treatment
  - Prevention
  - Genetics
  - Causes
- Screening and Testing
- Coping with Cancer
- Physician Data Query (PDQ®)

Special Features
- NCI Cancer Bulletin
  - Get the latest news from NCI
- You Can Quit Smoking Now!
- 2004 Freddie Award Winner
  - National Cancer Institute
  - Med1anet
  - A Service of the National Cancer Institute
Figure 5
Public Health Info Links from Rollins School of Public Health, Emory University
http://www.sph.emory.edu/PHIL.php
Retrieved April 6, 2005
THE INTERNET AS A TOOL FOR PUBLIC HEALTH AND IT'S ESSENTIAL SERVICES

The Institute of Medicine has identified three core functions of public health: assessment, policy development, and assurance (IOM 1988, 2003). Internet based communication and technology have been adopted to further the goals of each of these main functions. The activities under assurance have benefited the most from this new technology in the past 10 years. The potential of using Internet technology to benefit assessment functions is just coming to be realized. Similarly, more creative uses of the Internet to advance policy development have only recently become popular. For the remainder of the discussion, we will focus on how Internet applications have impacted the essential services of public health that fall under the umbrella of assuring the health of the public.

Assurance refers to the function of public health to assure the health and well-being of the population through health monitoring, service delivery and promoting conditions that are supportive of good health and well-being for the population. Several of the 10 essential public health services developed by the Public Health Function Steering Committee fall under this heading, at least in part. The use of Internet based technology has had the most dramatic influence on the following four of the ten essential services:

- Inform, educate and empower people about health issues (#3)
- Diagnose and investigate health problems and health hazards in the community (#2)
- Assure a competent public health and personal health care workforce (#8)
- Research for new insights and innovative solutions to health problems (#10)  
  (Public Health Function Steering Committee)

This paper will discuss examples of how Internet technology has impacted each of these areas.

INFORM, EDUCATE AND EMPOWER PEOPLE ABOUT HEALTH ISSUES

Internet based technology has been used to assist most obviously with Essential Service #3 through the provision of health information and education via Internet websites. As discussed, searching for health information on the web has become a major Internet activity.
Advantages of using the Internet as a communication medium for public health agencies include:

- the extendable nature of the Internet allows for a full message map to be presented, and extra detail is accessible the way it is not in traditional communication strategies such as press conferences and releases.
- creator control and review of what is presented, giving the chance to catch slip ups and misleading wording unlike “live” events.
- easy updating – an advantage for more long running information campaigns, especially when compared to static media such as brochures, videos, cd-rom (all of which can be costly to revise and reprint).
- wide audience reach for a (fairly) fixed price, so after the initial capital investment there is an economy of scale in cost features.
- Non-liner – a visitor can come for one reason, and then have their interest caught by other topics, such as on the CDC home page (a standard technique of all good marketing campaigns).

Public Health Agency Consumer Information

Until recently, most health information on the Internet has been focused towards individuals who are interested in personal or family health issues. This has started to change in the past few years as agencies such as CDC and non-profits like American Heart Association have begun to leverage the educational opportunity of the Internet to “push” prevention and wellness information to the public. Internet websites have become an essential component of promotion and outreach campaigns. The current home page of the Centers for Disease Control is an example of this (3/29/05 www.cdc.gov). The CDC home page includes information on prevention campaigns: “Get Screened” (colon cancer screening), “A blue ribbon season” (animal show health) and “Mothers and Children (World Health Day 2005) (Figure 2).

A consumer is likely to visit the CDC website to seek information on a specific health topic, such as those on the left navigation bar (birth defects, diseases and conditions, etc.), or a current health topic in the news, such as those in the center of the page. However, the CDC can capitalize on the visit by trying to engage the visitor with a topic that it is of interest to the CDC to inform and
educate about. Thus, the website is able to both respond to the initial interest of the visitor, but may also be able to capture the visitor’s interest in learning about additional health topics.

**Demographics of Internet Users**

For public health organizations to effectively use the Internet as a public communication medium, it is necessary to have an understanding of who is – and is not - “on” the Internet, as well as have a general sense of the activities they pursue, particularly those related to health topics. Internet use cross cuts boundaries of young and old, of race and background. While the much publicized “digital divide” between Internet users and non-users continues to exist, it also continues to close as more and more members of each demographic group come to use the Internet and as access at home, work and public locations increase.

According to Pew’s *Trends 2005* (http://www.pewinternet.org/trends.asp#demographics) “on a typical day at the end of 2004, some 70 million Americans logged on to the Internet” to conduct a variety of activities from email to e-bay, from researching their past to searching for future partners (Pew author 2004). Based on the US population reported by the US Census, that's approximately 1 in 4 Americans who check the Internet on any given day. The Pew project compares this to the 51 million Americans online when their project began in 2000. Another Pew report indicates that 66% of Americans “go online” with equal proportions of men and women. They translate that to 133 million people total at the time of their January 2005 survey (Pew 2005). Women now account for roughly half of Internet users, among all age groups. The Pew Internet project provides a useful summary on their website at http://www.pewinternet.org/trends/Internet_Activities_3.02.05.htm, which is reproduced in Figure 6.

**Race and Ethnicity**

In the United State, if you are white, live in the suburbs, and have at least some college level education, chances are, you use the Internet. In fact, approximately two thirds of those who consider
Figure 6  
“Who’s Online?” from the Pew Internet and American Life Project  
http://www.pewinternet.org/trends/User_Demo_03.07.05.htm  
Retrieved April 6, 2005

![Demographics of Internet Users](image)

<table>
<thead>
<tr>
<th>Demographics of Internet Users</th>
<th>Go Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Adults</td>
<td>66%</td>
</tr>
<tr>
<td>Women</td>
<td>65</td>
</tr>
<tr>
<td>Men</td>
<td>66</td>
</tr>
</tbody>
</table>

**Age**

<table>
<thead>
<tr>
<th>Age</th>
<th>Go Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>61%</td>
</tr>
<tr>
<td>30-49</td>
<td>78</td>
</tr>
<tr>
<td>50-64</td>
<td>63</td>
</tr>
<tr>
<td>65+</td>
<td>26</td>
</tr>
</tbody>
</table>

**Race/ethnicity**

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>Go Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>White, Non-Hispanic</td>
<td>69%</td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
<td>61</td>
</tr>
<tr>
<td>Hispanic</td>
<td>63</td>
</tr>
</tbody>
</table>

**Community type**

<table>
<thead>
<tr>
<th>Community type</th>
<th>Go Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>66%</td>
</tr>
<tr>
<td>Suburban</td>
<td>70</td>
</tr>
<tr>
<td>Rural</td>
<td>57</td>
</tr>
</tbody>
</table>

**Household income**

<table>
<thead>
<tr>
<th>Household income</th>
<th>Go Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $30,000/yr</td>
<td>48%</td>
</tr>
<tr>
<td>$30,000-$50,000</td>
<td>69</td>
</tr>
<tr>
<td>$50,000-$75,000</td>
<td>84</td>
</tr>
<tr>
<td>More than $75,000</td>
<td>92</td>
</tr>
</tbody>
</table>

**Educational attainment**

<table>
<thead>
<tr>
<th>Educational attainment</th>
<th>Go Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than High School</td>
<td>32%</td>
</tr>
<tr>
<td>High School</td>
<td>54</td>
</tr>
<tr>
<td>Some College</td>
<td>80</td>
</tr>
<tr>
<td>College+</td>
<td>88</td>
</tr>
</tbody>
</table>

Source: Pew Internet & American Life Project, January 2005 Tracking Survey. Please note that the January survey employed split form questioning in which half the sample was asked our traditional Q6 internet use question and the other half was asked a new two-part internet use question. N=2,201 adults, 18 and older. Margin of error is 2% for results based on the full sample.
themselves white use the Internet. Just over half of those who identify themselves as Black use the Internet (51%). Increase by both whites and blacks has increased dramatically in the past ten years, which use by whites beginning and remaining approximately 10 percentage points higher than use by blacks over the period. For at least the past five years, Asian Americans have had the highest Internet use of all groups, with over 75% of English speaking Asian Americans online in 2001, and increases since then (Spooner/Pew 2001).

**Age**

Those who are younger are more likely to use the Internet than those who are over 65. The Pew study reports 81% of those 18-29, 78% of those 30-49, and that 63% of those aged 50-64 went online in January 2005 (Pew 2005c). Younger Americans are the most likely to use the Internet – a ten year old is more likely to use the Internet than anyone over 25. Eighty-five percent of youth who are in school or college used the Internet in 2001, increasing every year between 1998 and 2001 (NTIA 2002).

Of those Americans aged 65 and older, only 22% use the Internet. Nonetheless, use is increasing in this older group, with a dramatic 47% increase between the Pew Internet and American Life’s baseline study of 2000 and their most recent of Feb 2004 (Fox 2004). Seniors who do use the Internet use it in the same ways as younger Internet users – from Internet to banking to health searches, and go online on a daily basis. Still, seniors who do use the Internet remain less than a quarter of the overall population of those over 65. It is worth noting though, that for those in their 50s and early 60s, Internet use is much higher than for those over 65. As members of this age group move into the "over 65" group, Internet usage will likely go with them. Further, as this group becomes older, retires and has more "free" time, it is possible their use of the Internet will actually
increase as they continue to pursue common Internet activities such as finding information on hobbies, news, local events, travel and health.

*Rural Dwellers versus Urban Dwellers*

Use of the Internet in rural areas is generally found to be about 10 percentage points behind the national statistics. This may reflect the larger proportion of the rural population that is over 65, which as discussed above, is a lower use group statistically. In addition, the costs for home access in rural areas continue to run higher than in urban areas, which when combined with generally lower economic means in rural areas become a noticeable impediment to Internet access and thus use (Bell, Reddy and Rainie 2004).

Interestingly, the Pew report suggests that rural Americans’ use of the Internet differs from the “national” picture, with slight percentage differences in activities such as online banking and shopping being less frequent and a slightly higher interest in Web based religious and health information. In general though, the differences in percentage use are not particularly dramatic – less than 5% points. The differences also appear consistent with other social and economic differences between rural and urban populations.

Of note for public health, 75% of rural Internet users have sought health information, compared to only 68% of those in the suburbs, and 64% of those in the city (Bell et al 2004). So even though the rural audience is a small portion of the over Internet audience than the suburban and city based audience, finding health information is a more significant activity for this audience than for non-rural populations.

Rural African Americans are less likely to use the Internet than rural whites, with only 31% of rural African Americans using the Internet, compared to 54% of rural whites (Bell et al 2004).
Nonetheless, the ability to reach 1/3 of an audience directly is worth noting, and use of the Internet by rural African Americans should not be dismissed as insignificant.

*Those with Disabilities*

Those with disabilities are the least likely of all groups to use the Internet (NTIA 2002). However, of those with disabilities those who have a computer are likely to use the Internet (between 56 and 75% depending on the number and type of disability, and age). Difficulty using the Internet generally felt to do be due to physical challenges with using the hardware (mouse, keyboard) as well as economic constraints that may prevent those with low incomes from affording computers and Internet connections.

*Doctors and Other Health Care Professionals*

These statistics and demographics refer to Internet users in general, without regard to profession. In the realm of e-health, the use of the Internet by health care professionals for work has grown, just as it has for non-work related uses. As many as 93% of physicians use the Internet (Liechentstien 2001) and the number has steadily grown since 1999. Jupiter Research estimated in 2001 that physicians are twice as likely to use the Internet as non-physicians.

*Consumer Health Information Seekers*

The percentage of those who have searched for health information is growing, and has increased from 13% in 2000 to the 21% according to a Harris Interactive poll (2004). This figure represents only those users who report conducting these activities “often” or “very often”. Of note, those with disabilities are more likely than those without to have looked for health information online – between one third to one half of this group have looked for health information (NTIA 2002).

To understand the scope of the impact of health information on the Internet, one should include all those who do not seek out health information “often” but only when they need it or when there is
a specific issue of concern. The *Ten Years Ten Trends* reports states that 51% of Internet users have searched for health information in the past 12 months (USC 2004). This study ranks seeking health information as the 7th most popular activity. The *Pew Internet and American Life* project reports that 66% of online users have looked “for health/medical info” as of Dec 2002 (their most recent figure; Pew 2005a) to 51% in the USC study (USC 2005). Fifty eight percent of health information seekers have gone to a website geared towards a specific medical condition (Pew 2004b). One can extrapolate from these figures to suggest that roughly 66% of 133 million, or a total of 87 million Americans, have looked for health information online.

Internet users primarily appear to be looking to verify, support, and supplement health information from other, more traditional channels, such as doctors and healthcare professionals (USC 2005). A variety of studies, including the USC study indicate that Internet users are looking for information about their own medical conditions and health and illness issues related to a “family member or loved one”. Consumers report that health information on the Internet is variously described as “easy to find,” “widely available” and “quickly acquired” (USC 2005). Internet users are comfortable with the information they are finding and are quite confident in their ability to find more or similar information again (Fallows 2005).

It is clear that the Internet has been established as a major source for health information, and that this use continues to increase (Harris Interactive 2004). Taken together, these various survey results indicate that Americans in 2005 are quite active in seeking out information on health and disease, that they choose to do this frequently, and that this audience is in general becoming more informed about health and disease. The readily available information from the Internet lets people both ask and answer questions about health that ten years ago they would have had to go to the doctor or a major university medical library to research. As a corollary, Americans are beginning to expect
more information about health topics including both detail and breadth of information. There are clear implications for the patient/provider relationship based on this change in the patient to more knowledgeable and active.

Underserved and Marginalized Health Information Seekers

Despite the “digital divide”, it is clear that members of minority groups, those with fewer economic means, and others who are underserved do use the Internet. They may not use it as much or as frequently as others, but a saturation point has been reached. Internet based dissemination and communication can no longer be ignored when composing a public health communication strategy, even for the underserved. For example, a 2003 study in Washington DC sought to examine the attitudes and behaviors of low income, African-American parents towards finding health information on the Internet (Kind et al 2004). Over half of those in the study had used the Internet to find health information, and over 90% agreed that there is useful health information on the Internet. This is not unique; other studies have looked at a variety of underserved or marginalized populations and found that the Internet is a valuable health information resource for them (for example, those in rural areas with specific illness, teens, and groups at risk for health problems due to behaviors that are considered marginal in their community, such as African American men who have sex with men).

Challenges and Caveats for Public Health Information Creators

Increased use by a wider variety of individuals will require accommodation by content creators, especially those working with health information. A challenge for health content creators is related to health literacy levels. The content of most Internet sites is often written at a 10th grade reading level, or even higher. This poses a significant impediment for those with low health literacy, as well as those with low general literacy (e.g., Birru, Monaco, Charles, Drew, Njie, Bierria, Detlefsen and
Steinman 2004). In the past, it has been feasible to overlook this issue, as Internet uses tended to be a high literacy crowd. However, as Internet use increases across all groups, it will become increasingly more important to design health related content that is useful to both those with low and higher health literacy levels. One successful approach is to utilize the “hyperlink” capacity to provide additional detail or alternate presentation to accommodate different groups. Similar strategies can also assist those with language preferences.

It is important for information providers to be aware of the presence of information on the Internet that is not accurate or reliable. Health information seekers use the major search engines (Google, Yahoo, and MSN). Nonetheless, most users report being unclear about exactly how “sponsored” or “paid” links are different from the standard links (Fallows 2005). Users tend to trust government sites, and well known, large sites (such as WebMD or MedEm).

Public health agencies such as government agencies and large non-profits are well positioned to leverage their inherent credibility to provide accurate information on health topics. This can be especially valuable in relation to new and emerging health issues, or “crisis” situations such as the SARS outbreak of 2003 or the Anthrax scare in 2001/02. Further, it would be beneficial for the field of public health to investigate similarities and differences between those who seek for “health or medical information” and those who are looking for areas specific to public health.

Health Crisis Information Dissemination

The rapid nature of communication can contribute to crisis, or even create a false sense of crisis. Providing accurate information to consumers is essential when concerns over health issues on a national or global level mount. A new role for educating the public is to counteract ‘disinformation’ and bad information, particularly in times of crisis. Organizations with considerable prestige can leverage that through use of their website during times of concern. The WHO acknowledges the
reach of the Internet in the “Outbreak communication guidelines” where guideline 2a notes that “in today’s globalize, wired world, information about outbreaks is almost impossible to keep hidden from the public” (WHO 200528). Federal and international agencies are well positioned to allay fears and provide appropriate information at these times. Both the Pew Internet and USB studies show that people trust the information from government agencies and larger websites, and look for information from these sources. Agencies like the CDC, NIH, and WHO have both the opportunity and obligation to provide public information.

The WHO Outbreak News Alert (http://www.who.int/csr/don/en/) is an example, as are the links from the CDC and NIH home pages to “hot topics” such as Avian Flu, or Anthrax (see Kittler 2004 for a study showing 21% of respondents searched the Internet for Anthrax information in 2001). The World Health Organization’s use of the Internet to communicate their “real time alerts” on the WHO “Disease Outbreak News” is published by the WHO’s Communicable Disease Surveillance and Response department (CSR) Global Outbreak Alert and Response Network (GOARN) (Figure 7 for the Disease Outbreak News and Figure 8 for the GOARN home page). The WHO website posts “press release” style announcements on disease outbreaks, with new announcements being added on a roughly daily basis. Information may be only 1-2 days old. These announcements are for the public, and represent data that have been reviewed and “vetted” for accuracy by the WHO. It also serves as an information resource for professionals who are not directly involved in global health and epidemiology. They can be found at http://www.who.int/csr/don/en/.

DIAGNOSE AND INVESTIGATE HEALTH PROBLEMS AND HEALTH HAZARDS IN THE COMMUNITY

Consumer education about crisis or outbreak situations is essential, but first those situations must be identified by the public health professional. These activities fall under Essential Service #2,
As of 23 March 2005, 71 suspected cases including 5 deaths (case fatality rate, 7.04%) have been reported from Sarf Omra, North Darfur state. Neisseria meningitidis serogroup W135 has been identified by either latex test or culture in 11 out of 20 specimens collected.

A mass vaccination campaign using trivalent vaccine provided by the International Coordinating Group (ICG) on Vaccine Provision for Epidemic Meningitis Control and targeting a population of 45,000 started on 2 April in the Sarf Omra administrative unit and surrounding villages. Médecins sans Frontières-Belgium and WHO have supported the Federal Ministry of Health in implementing the campaign.
The Global Outbreak Alert and Response Network (GOARN) is a technical collaboration of existing institutions and networks who pool human and technical resources for the rapid identification, confirmation and response to outbreaks of international importance. The Network provides an operational framework to link this expertise and skill to keep the international community constantly alert to the threat of outbreaks and ready to respond.

**Objectives**

The Global Outbreak Alert and Response Network contributes towards global health security by:

- combating the international spread of outbreaks
- ensuring that appropriate technical assistance reaches affected states rapidly
- contributing to long-term epidemic preparedness and capacity building.

The initial meeting of partners in Geneva in April 2000 brought together representatives of technical institutions, organizations and networks in global epidemic surveillance and response to discuss "Global Outbreak Alert and Response". Participants identified the need for a global network, building on new and existing partnerships, to deal with the global threats of epidemic-prone and emerging diseases. A Steering Committee of network partners is guiding development of the network, WHO coordinates international outbreak response using resources from the network. WHO also provides a secretarial service for the network (e.g. employment of project manager, support for the Steering Committee and structures) as part of its Alert and Response Operations within CSR. In addition, protocols for network structure, operations and communications have been developed to improve coordination between partners.

**Partners**

The Global Outbreak Alert and Response Network focuses technical and operational resources from scientific institutions in Member States, medical and surveillance initiatives, regional technical networks, networks of laboratories, United Nations organizations (e.g. UNICEF, UNHCR), the Red Cross (International Committee of the Red Cross, International Federation of Red Cross and Red Crescent Societies and national societies) and international humanitarian nongovernmental organizations (e.g. Médecins sans Frontières, International Rescue Committee, Oxfam and Médecins du Monde). Participation is open to technical
the diagnosis and investigation of health problems and health hazards in the community. Internet based technology has allowed exciting advances in these areas, and is still evolving new ways that rapid communication and high powered data analysis can advance public health.

Possibly the most exciting contribution the Internet can make towards advancing the mission of public health can be seen in the area of communication among professionals. The Internet offers an opportunity to reach professionals all around the world quickly, easily, and with a minimum of communication distortion. Information can be posted on websites, sent by email, and sought from databases in real time.

**Identifying Emerging Threats**

The potential for rapid, accurate, timely communication among professionals in the public health field can be seen in the recent example of the severe acute respiratory syndrome, SARS, outbreak of 2003. People - and SARS - were able to travel faster than information about the emerging disease. With the establishment of disease databases accessible to professionals around the world, the full resources of epidemiology can be brought to bear more rapidly, and more easily than the current model. The Centers for Disease Control established the SARS Surveillance Project (SARS-SP), which linked a final total of 27 emergency departments using already existing Internet tools. The project's goals were to disseminate and update screening forms rapidly, expand and establish multi-regional surveillance, and lastly to evaluate the utility of the Internet in these efforts. Satisfaction with the program was high, and the viability of multi-regional Internet based surveillance systems was confirmed (Foldy et al 2004).

The WHO also uses the speed of Internet communication to assist data communication among infectious diseases professionals, and attributes early detection of SARS in China in part to their Global Outbreak and Response Network, or GOARN (WHO 5/20/2003; Figure 8). A “network of electronically interconnected” individuals and agencies from WHO member countries allows both
confirmed information and speculation (rumors) to be circulated among relevant health professionals. Rapid updates on verification and information are communicated in a “secure” environment, facilitating collaboration and response to emerging and time sensitive issues.

The Global Public Health Intelligence Network (GPHIN) is a sort of “early warning” system media filter that functions under GOARN. GOARN uses a combination of infrastructure, personnel, and technical resources including databases and rapid communication among governments and nongovernmental organizations (NGOs) around the globe (FAO 2002). The GPHIN uses both computer based programs and humans to scan the Internet (specifically major news media such the AP, web sites, etc) to look for patterns and information on topics that might have significance to public health professionals. It is distributed to and through the WHO (as well as other public health agencies) and was developed by Health Canada in 1997. This computer program/human combination of pattern and data combination is a form of data mining that can be used to catch emergent issues in their early stages. This can overcome barriers that countries may have about reporting worrisome disease outbreaks, allow the international community to identify other potential public health problems such as shortages or otherwise isolated product or therapeutic issues.

There are two important aspects of the success of GOARN to note – the ability to scan information from a wide area and multiple sources plus the ability to receive that information and data the quickest way possible, and then to disseminate it equally quickly. This ability to pull together and analyze large amounts of seemingly disparate data will continue to change how the health world communicates. According to the WHO, GPHIN identifies approximately 40% of the disease outbreaks that the WHO investigates each year, and allows early assessment of problem areas – before not only health, but socio-political, consequences rise out of control (WHO 5/20/03:4-5).
The Real-Time Outbreak and Disease Surveillance, RODS, program based in the Pittsburgh, PA region serves a similar function to GPHIN on the local level. Rather than scanning news feeds, the RODS program compiles real-time data from emergency departments different emergency departments, using Health Level 7 terminology (Wagner et al 2004). RODS data on each individual’s chief complaint is anonymously directed via Internet to a central computer network in Pittsburgh, PA, with both computer based algorithms and health professionals analyze it for trends and patterns indicative of disease outbreak or surveillance. One example of success was the rapid identification of a carbon monoxide poisoning event due to a faulty furnace (over 60 cases in one day period were reported).

The RODS project is currently used by 94 hospitals/urgent care facilities in 5 states and Taiwan. The programming code is now available as open-source and was placed in the public domain by the University of Pittsburgh with the intent of decreasing barriers to adoption by resource low facilities.

Similar systems have been proposed by others, such as the “Information technology and public health management of disasters--a model for South Asian countries” which calls for a similar infrastructure to facilitate communication, data and knowledge transfer with that region, both within and among countries (Mathew 2004).

ASSURE A COMPETENT PUBLIC HEALTH AND PERSONAL HEALTH CARE WORKFORCE.

Internet based distance training programs

Distance education is expanding the reach of educational options to broad and geographically diverse audiences of health and public health professionals. Online continuing medical education programs for physicians, nurses, pharmacists, certified counselors, and others are growing rapidly. In the past 4 years there has been a 2000% in physician use of online continuing medical education, and a 12,000% increase in non-physician users (ACCME 2004). Online continuing education programs offer the ease of 24/7 accesses for the learner, as well as the ability of the “instructor” to
standardize presentation to a broad audience (thus increasing overall quality and reliability of the information), as well as follow up data collection simplified.

Longer professional degree and certificate programs such as UNC's MPH distance program allow educational opportunities to a much broader audience (Figure 9). There are currently 12 different schools offering distance MPH programs in the United States, when 10 years ago there were virtually none. Four of these programs were developed in part with funding and support from the CDC intended to encourage distance based learning and training in public health. A list of the variety of programs available online related to public health can be found from the Association of Schools of Public Health website (www.asph.org).

The University of North Carolina’s Certificate Programs in Core Public Health Concepts, Epidemiology, and Community Preparedness, offer new mechanisms for public health professionals to increase their training and education, without taking undue time away from work and career commitments. These programs, and others like them, capitalize on the rise of distance learning to answer the need for a better trained and educated public health workforce. With the growing need for training in disaster preparedness, emergency management as well as more established public health training areas, the Internet offers options to those who could not otherwise get to class or attend training.

The CDC takes advantage of distance learning's ability to reach a nationwide audience with their Public Health Training Network, which boasts 4.8 million learners since its start in 1993 (CDC accessed 4/5/05). The PHTN involves the CDC and partner organizations (such as the UNC-Ch School of Public Health) use a variety of technologies including web casts and net conferences as well as more conventional media such as videotape and print. One example is the Public Health Grand Rounds, produced with partner UNC-CH. A recent example is “Antimicrobial Resistance:
Institutes & Centers

Distance Education

The UNC School of Public Health is a recognized leader in distance education. The school has many programs for working public health professionals designed to allow continued training and education in a range of flexible formats. The school is committed to developing these and other programs in mediums most appropriate to the training content and audience.

Please see individual programs for contact information.

Distance-Based Degree Programs

MPH in Public Health Leadership
DrPH in Public Health Leadership
Executive MPH and MHA
MPH in Public Health Nursing
MPH in Occupational Health Nursing

Certificate programs include:

Core Public Health Concepts
Field Epidemiology
Health Care Management
Old Bugs, New Threats, and Public Health Response”, a one hour presentation scheduled for live web cast on April 8, 2005, that will also be available via Internet after the presentation (Figure 10).

The ability to reach professionals across the nation “in one fell swoop” has tremendous advantages for standardization, quality control and rapid dissemination of professional education and training. In addition, the ability to archive presentations for future reference and future learners is a significant advantage over the traditional face-to-face lecture. Recent “hot” topics have focused on disaster preparedness, bio terrorism related topics, and emerging disease issues. For the past 12 years, the PHTN has sponsored the “Public Health Distance Learning Summit” to focus professional and scholarly discussion on the topic of distance education and training in public health.

Professional Organizations and Resources

The American Public Health Association uses its website as a clearinghouse for information of interest to members and other public health professionals (www.apha.org, Figure 11). A media section includes APHA press releases, news blurbs and links to relevant stories from newspapers around the country. Information on the APHA’s meetings, professional education, continuing education opportunities, and publications is featured. Finally, the APHA website includes policy news and career/employment information. The website serves as a vehicle to connect public health professionals with their organization, and to advance member’s training, knowledge and opportunities. Almost every health and public health professional organization has a web presence with similar information. Similar examples are the Association of Schools of Public Health (www.ASPH.org), the American Medical Association (www.ama.org), and societies of state and local health centers and boards, such as the Virginia Department of Health mentioned previously (Figure 4). A useful list of the websites of associations of interest to public health professionals can
Figure 10
Home page of the Public Health Grand Rounds programs at UNC-CH School of Public Health, in conjunction with the CDC and Public Health Training Network
http://publichealthgrandrounds.unc.edu/
Retrieved on April 6, 2005
The American Public Health Association has extended the deadline for nominations to May 31, 2005.

APHA is pleased to announce the Helen Rodriquez-Trias Social Justice Award.

Public Health Associations Today Observe World Health Day During National Public Health Week.

Public Health Leaders to Speak at Northern and Southern California Public Health Association's Meeting.

Former Philadelphia Health Commissioner, National Association President to Speak at Public Health Association of New York City Meeting.

American Public Health Association Urges Older Americans to Screen Early for Diseases and to Monitor Their Health During National Public Health Week in April.

American Public Health Association Chides the House for Its Passage of Budget Resolution That Calls for Dramatic Cuts to Medicaid.
be found through the Public Health Info Links website at http://www.sph.emory.edu/PHIL/PHILassoc.php.

*Partners in Information Access for the Public Health Workforce*, www.phpartners.org (Figure 12), is a collaborative effort of several federal agencies (e.g., CDC, NIH, ACRQ, NLM), public health organizations (e.g., APHA, ASPH) and libraries (e.g., Medical Library Association).

Launched in 1998 as result of planning begun in 1995 the Partners project is led by the CDC with technical support for much of the project from the National Library of Medicine. The Partners project has been involved in webcasts, development of tutorials, and maintains an email list. Of note here is the participation in UNC Public Health Grand Rounds of “Wired Communities: Putting the e in Public Health” which focused on how one Virginia community has used the Internet to increase community connection (originally broadcast 01/31/03). In addition, the Partners website provides easy links to materials on preparedness, data training, grant and funding opportunities, Healthy People 2010 content and more. A small section highlights recent news. Most sections provide numerous lists of links to websites related to public health in areas such as training, legislation, health data, jobs, and health promotion and education materials. In general, it is useful compendium of links to other relevant websites, with a small (but increasing) amount of content. Goals for the 2004-2006 period involve developing additional projects to “meet the information needs of the public health workforce,” and improving the “information literacy” of the public health workforce (see Partners “Partners History, 1995-2006 retrieved from http://www.phpartners.org/PartnersHistory.pdf).

**Research for New Insights and Innovative Solutions to Health Problems**

Many of the approaches discussed under the previous three headings could be subsumed under the essential service of public health to conduct research to discover “innovative solutions to health...
Figure 12
Partners In Information Access for the Public Health Workforce
www.phpartners.org Retrieved April 9, 2005

Our Mission
Helping the public health workforce find and use information effectively to improve and protect the public's health

- Health Promotion and Health Education
- Literature and Guidelines
- Health Data Tools and Statistics
- Grants and Funding
- Education and Training
- Legislation
- Conferences and Meetings
- Finding People
- Discussion and E-mail Lists
- Jobs and Careers

What's New on PhpPartners.org?
Subscribe to the weekly announcement list of new resources

Public Health Information and Data: A Training Manual

Research is just a click away...

Latest News
- Trust for America's Health Released Critical Care List of Top 10 Public Health Priorities
- FDA Asks for Public Comment on Food Label Changes
- Children Are Doing Better, But Only a Little, Index Reports

>> more news

Resource Guide for Public Health Preparedness

NATIONAL PUBLIC HEALTH WEEK

April 4-10, 2005

Partners:
- Agency for Healthcare Research and Qualtity
- American Public Health Association
- Association of Schools of Public Health
- Association of State and Territorial Health Officials
- Centers for Disease Control and Prevention
- Health Resources and Services Administration
- Medical Library Association
- National Association of County and City Health Officials
- National Library of Medicine
- National Network of Libraries of Medicine
- Public Health Foundation
- Society for Public Health Education

Copyright | Privacy | Accessibility | Freedom of Information Act

Page Last Updated: 05-APR-2005
problems,” such as the disease outbreak and surveillance tools, new avenues of communication about health problems and issues, and the innovative training for professionals in dispersed locations that the Internet provides.

**Provider Use of the Internet for Practice of Health Care**

Use of the Internet by health professionals tends to focus on logistical tasks related to their practice. For physicians tasks include billing/health insurance inquiries, ordering supplies, and distance continuing medical education. There is comparatively little use of patient-provider direct communication via mechanisms such as email; concerns related to privacy and misunderstanding are often cited as reasons (rates vary from 13% in 2001 to 25% in 2002 (Harris Interactive, 2001; Lichtenstein and Peters 2002). Note that most consumers indicate that they would like MORE email interaction with their care providers.

**Disease and Health Management Research and Tools**

The Internet provides new methodologies for disease and health management, allowing individuals to track their health status and data using computer based tools not available in previous years. While many of these are Internet based, most could just as easily be classified as interactive health communications or computer based tools that do not require the communication and connectivity of the Internet. Also, most tools focus on the health of the individual rather than population-wide health. For example, there are a plethora of Internet based smoking cessation tools and websites, yet each of these is focused on the individual smoker, and does not address the larger “public health” aspect of smoking cessation.

Additionally, health is being positively impacted by the rise of Internet based communication among disease sufferers. Online chat and support groups are having a positive impact on individuals dealing with addiction issues, disabilities, and mental health issues (e.g., HIV positive youth see Flicker, Goldberg, Read, Veinot, McClelland, Saulnier, and Skinner 2004; for Rainie and Horrigan
The Internet allows individuals to connect with others in a manner that often is not possible due to time or distance constraints.

Unfortunately, the Internet has also become an easy and simple way for people who wish to engage in unsafe or unhealthy behaviors to connect. For example within the gay community the Internet has become the prime method of arranging “parties” that combine unsafe sex practices with use of illegal drugs (primarily crystal methadone) leading to a rise in HIV infection (as well as other STDs and problems associated with use of crystal and other drugs) (see Fernandez, Perrino, Collazo, Varga, Marsh, Hernandez, Rehbein, and Bowen 2005). Interestingly, at least one research study has been able to find a silver lining, and has successfully used Internet chat rooms as a recruitment venue for the target population from this at risk group (Hirshfield, Reminne, Wlavalker and Chiasson 2004).

**Internet Based Assessment**

Internet based survey has a number of advantages over more traditional survey methodology for researchers. Data entry errors are reduced, data communication is facilitated, and questions can be nested more simply than with paper or voice based surveys. There remains debate in the survey community about the comparative reliability of Internet based survey techniques in comparison to paper/mail, phone and face-to-face survey. Recent publications have dealt extensively with this issue (e.g., Journal of Medical Internet Research Vol 6(3) for a variety of examples). The current consensus is that Internet based assessment is equally valid when appropriately designed.

Thus, public health in the future should look for ways to incorporate Internet based surveys into the assessment functions, while keeping in mind that some segments of the community may not be reachable. As the Fernandez study shows however, other community segments are uniquely reachable via the Internet. As with the educational interventions and public health information programs, the value of the Internet lies in the vast economy of scale possible. Once designed and
programmed, a survey can be distributed and results tallied for thousands for essentially the same cost as for a hundred. This is certainly not true for mail or phone based surveys. Survey and data collection hold promise for solid improvement in public health research, albeit not as spectacular as some of the advances discussed in other data heavy activities such as surveillance.

A few areas of innovative research are noteworthy from a population health perspective. The Internet offers the ability to collect data for research studies in a fast efficient manner, just as it does for disease surveillance. Similar methods can, and are, being used for real-time data monitoring of research studies and clinical trials.

**Research: Data and Literature on the Internet**

The use of Internet accessible databases has had a significant impact on all those who work in the health field. This includes secondary research such as using online versions of Medline, ERIC and similar databases. In addition, Internet technology now allows easy access to primary data sources – from the US Census, the CDC’s WISQARS (Figure 13), and NCI’s HINTS (http://www.dccps.cancer.gov/hints/about.jsp; Figure 14) so that large national studies and data collections can be used by numerous research projects. The PH Partners website also includes links to several national, state, and related public health data sets (see http://www.phpartners.org/health_stats.html).

Access to the vast realm of medical and health related publications and data allows professionals around the globe relatively easy access to the latest publications and has increased dissemination. The use of the Internet as the preferred means of research dissemination was highlighted by NIH’s recent mandate that all publications based on NIH funded research be archived at an NIH National Library of Medicine PUBMEDCentral within 12 months of publication. Thus, both public and professional access to research results from publicly funded studies will be increased dramatically.
Figure 13
CDC WISQARS home page
http://www.cdc.gov/ncipc/wisqars/ Retrieved April 9, 2005

<table>
<thead>
<tr>
<th>WISQARS Fatal</th>
<th>WISQARS Nonfatal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presents U.S. injury mortality data.</td>
<td>Provides national estimates of nonfatal injuries treated in U.S. hospital emergency departments</td>
</tr>
<tr>
<td>Fatal Injury Reports</td>
<td>Nonfatal Injury Reports</td>
</tr>
<tr>
<td>Tables of injury deaths and death rates by particular causes of injury mortality</td>
<td>Tables of national estimates of injuries and injury rates by particular injury causes</td>
</tr>
<tr>
<td>Leading Causes of Death Reports</td>
<td>Leading Causes of Nonfatal Injury Reports</td>
</tr>
<tr>
<td>Charts of deaths by common causes of death</td>
<td>Charts of national estimates of injuries by common causes of injury</td>
</tr>
<tr>
<td>Years of Potential Life Lost (YPLL)</td>
<td>Years of Potential Life Lost (YPLL)</td>
</tr>
<tr>
<td>Charts of years of potential life lost (premature death) by specific causes of injury mortality and common causes of death</td>
<td>Charts of years of potential life lost (premature death) by specific causes of injury mortality and common causes of death</td>
</tr>
</tbody>
</table>

WISQARS Fatal Help and Information
- Tutorial
- How to get started
- Help
  - Overview of fatal injury report types, definitions of terms, more information about WISQARS data
- FAQs
  - Common questions about WISQARS Fatal
- ICD-10 Coding of 1999 Mortality Data: How the new coding affects WISQARS Fatal reports.
- Availability of New Fatal Injury Data

WISQARS Nonfatal Help and Information
- Tutorial
- How to get started
- Help
  - Overview of nonfatal injury report types, definitions of terms, background on data sources and processing procedures
- Availability of New Nonfatal Injury Data

Privacy Notice
This page last reviewed 04/06/05
Learn About HINTS

HINTS collects nationally representative data routinely about the American public's use of cancer-related information. The survey:

- Provides updates on changing patterns, needs, and information opportunities in health
- Identifies changing communications trends and practices
- Assesses cancer information access and usage
- Provides information about how cancer risks are perceived
- Offers a testbed to researchers to test new theories in health communication

How HINTS Data Are Used

The HINTS data collection program was created to monitor changes in the rapidly evolving field of health communication. Survey researchers are using the data to understand how adults 18 years and older use different communication channels, including the Internet, to obtain vital health information for themselves and their loved ones. Program planners are using the data to overcome barriers to health information usage across populations, and obtaining the data they need to create more effective communication strategies. Finally, social scientists are using the data to refine their theories of health communication in the information age and to offer new and better recommendations for reducing the burden of cancer throughout the population.

NCI Presentations

The following two presentations were presented to researchers at the National Cancer Institute. They are provided here as background to the survey and the analytic methodologies appropriate for nationally weighted probability samples.

- HINTS Presentation to NCI Director, presented 12-18-2003
  - PDF (2.3 MB)
- Analyzing Weighted Survey Data, presented 2-9-2004
  - PDF (774 KB)

Schedule of Events

Year | Activity
--- | ---
1999 | NCI publishes Risk Communication Monograph
2000 | Survey budgeted as "Extraordinary Opportunity"
2001 | Development work begins
2002 | HINTS I data collection begins
2003 | HINTS I data collection ends; data cleaned
2004 | HINTS I data released to public; HINTS II, development begins
CONCLUSION

There are numerous examples of how individual public health departments and agencies or communities have adapted to the wired age and use Internet technology as for public communication and outreach, as well as professional communication, training and research. This paper has reviewed examples related to four of the ten essential services; the relevance and utility for additional areas such as policy is significant, but outside the scope of this work.

Every federal and national agency now has an Internet presence and strategy, making information and some resources available in a broad manner. Indeed, the use of the Internet has become so commonplace that it is truly what the Pew Internet and American Life calls “the new normal” (Rainie and Horrigan 2005). For public health, the changes brought by the Internet have primarily consisted of expanding access to information and resources, and connecting people and data from disparate locations with a new speed. These changes have allowed public health to ‘do it’s job’ in faster, more efficient ways. There has not been a fundamental change in “what” the job of public health is, or should be, due to the rise of the Internet, only in how that job should be done.

In the coming years, agencies and individuals within the field of public health must determine strategies to take “e public health” to the next level. This should include actively reaching out to the underserved and disabled, to those in rural areas, as well as to majority populations who use the Internet. Research is needed to understand the audience for public health information in contrast to general health information. The credibility of public health agency websites at all levels (international, national, state and local) should be more actively leveraged in times of crisis. Further work in the disease identification based on both news report and real time data collection should be encouraged so that epidemiology may benefit from advances in computer intelligence and data analysis. The past ten years have thoroughly changed how consumers and professionals in America
find information, yet the process has been evolutionary, and grown without significant design. It is time to take a more strategic approach to determine how best to make use of the current reality and future potential of the Internet to advance the mission of public health.

Acknowledgements: Thank you to Brad Tanner, spouse extraordinaire who enabled me to participate in the distance MPH program at UNC over the past 4 years, and to 3 wonderful and surprisingly patient children who (mostly) let Mommy do her computer classes.

The staff at Clinical Tools have shared their insights and patience with the Internet and all aspects of health care during the past years. In particular, Karen Rossie, DMD, MSc, PhD kindly consented to read this paper in draft version; Jennie Ratcliffe, PhD, provided info on GOARN; and Meghan Coulehan, MPH, provided a sounding board on the topic of the Internet and public health.
BIBLIOGRAPHY


Harris Interactive (2004). Email, Research, News and Weather, Information about Hobbies or Special Interests Top the List of How People Use the Internet as it Continues to Grow -12/15/04, retrieved on March 28, 2005 from http://www.harrisinteractive.com/harris_poll/index.asp?pid=527


The Internet in Service to Public Health

Mary P. Metcalf


44