Can Health IT Promote Health Equity and Patient-Centered Care?

March 2011

Key Points

- Health information technology (HIT) holds the potential to improve the quality, safety, and equity of health care, but it also has the potential to unintentionally increase disparities in health and health care.

- There are a variety of sociocultural, economic, human factors, and environmental issues at play with HIT that could compromise health equity—by leading to differential benefits across populations that increase rather than reduce disparities.

- Digital disparities persist among older adults, racial and ethnic minorities, physically disabled, lower-income, and those with limited English proficiency.

- There is emerging evidence of pervasive racial/ethnic and educational disparities in use of patient portals.

- National health care reform increases the urgency for the health sector to address eHealth equity because many of the newly eligible for coverage are at-risk for health disparities and will have relatively little meaningful access to consumer technologies.

What Health Care Leaders Need to Know Health

Health care leaders need to understand and address eHealth* equity, because their approach to eHealth can either narrow or widen health disparities. The more the health sector focuses on health information technology (HIT) as a tool to improve the quality and efficiency of care, the more critical it becomes to address eHealth equity.[i] Increased barriers to eHealth access and reductions in health care quality and safety are the potential risks to people without meaningful access to eHealth. Factors that influence eHealth equity include:

- Race and ethnicity
- Disabilities
- Resource-poor settings (e.g., rural, inner-city locations)
- Socioeconomic status
- Age
- Language and acculturation
- Low literacy

Internet-enabled eHealth applications, such as patient portals or personal health records, help patients with chronic illnesses to communicate with providers, enable family caregivers to be better health care advocates, and provide a vehicle for individuals to receive ongoing self-management support. Meanwhile, clinicians who use electronic health records, electronic prescribing, and clinical decision support tools do a better job of keeping their patients healthy and safe. But the benefits of these technologies may disproportionately accrue to patients and providers with both the physical access to eHealth and the resources and skills needed to use them.

Health disparities also impact many people who already have meaningful access to technology. This creates opportunities for narrowing health disparities through the use of consumer technologies.

* According the World Health Organization**, e-Health** is the combined use of electronic communication and information technology in the health sector. Please see Appendix A for a Glossary of Terms, including the broad range of elements covered by eHealth.
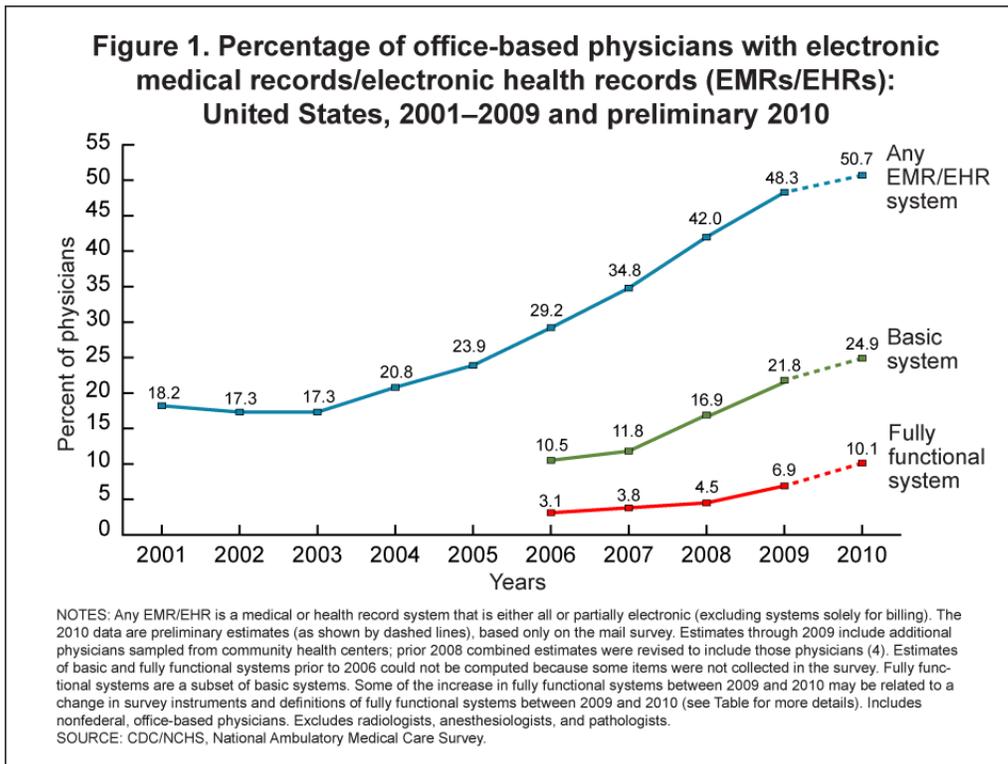
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Potential Sources of eHealth Disparities

Inequities in the distribution of eHealth result from a complex interaction of patient, provider, organizational, environmental and societal factors. Two potential pathways to disparities can be categorized in order to better understand the nature of the problem and to identify potential solutions: 1) the gap between well-resourced and under-resourced providers; and 2) disparities exacerbated among at-risk populations.

The Gap between Well-resourced and Under-resourced Providers

Populations at-risk for eHealth disparities are served disproportionately by under-resourced providers that are often disenfranchised from larger integrated health systems. These "have-not" providers are less likely to be able to afford consumer-oriented eHealth technology (e.g., EHRs, PHRs, telemedicine, home health devices) or to have the support necessary to successfully implement and maintain them. Under-resourced providers include solo, small, rural, Medicaid, and uninsured-dominant practices and providers. If a practice doesn't have a highly functioning EHR, patients can't have access to a shared medical record through a patient portal, and their options for self-management support and communication with their care teams are more limited. The widened gap between the quality of care available to patients whose providers are eHealth-enabled and those whose provider not will actually increase disparities in health and health care.

Figure 1. Percentage of office-based physicians with electronic medical records/electronic health records (EMRs/EHRs): United States, 2001–2009 and preliminary 2010

NOTES: Any EMR/EHR is a medical or health record system that is either all or partially electronic (excluding systems solely for billing). The 2010 data are preliminary estimates (as shown by dashed lines), based only on the mail survey. Estimates through 2009 include additional physicians sampled from community health centers; prior 2008 combined estimates were revised to include those physicians (4). Estimates of basic and fully functional systems prior to 2006 could not be computed because some items were not collected in the survey. Fully functional systems are a subset of basic systems. Some of the increase in fully functional systems between 2009 and 2010 may be related to a change in survey instruments and definitions of fully functional systems between 2009 and 2010 (see Table for more details). Includes nonfederal, office-based physicians. Excludes radiologists, anesthesiologists, and pathologists.
SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey.

There has been an increasing trend in electronic health record adoption among office-based physicians from 2001 through preliminary 2010 estimates (Figure 1). Data from 2009 physician surveys showed that 48.3% of physicians reported using all or partial EHR systems in their office-based practices. Another 21.8% of physicians reported having systems that met the criteria of a basic system, and 6.9% reported having systems that met the criteria of a fully functional system.[ii]

The health care IT adoption incentives contained in the **American Reinvestment and Recovery Act (ARRA)** begin to address the needs of many under-resourced providers who have historically faced many challenges in acquiring and

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implementing HIT.   The 2009 law included $49 billion in investments in health care IT, including financial incentives for health care providers who treat Medicaid or Medicare patients and who can demonstrate meaningful use of the technology. Eligible providers may receive incentive payments during the 2011-2015 time period if they can demonstrate adoption and meaningful use of certified electronic health record technology.

Disparities Exacerbated among At-risk Populations

Health IT has the potential to facilitate communication between patients "at-risk" for health disparities and their health care providers, and it can give these patients online access to test results, immunization records, prescription refills, and patient education information. But health IT also has the potential to exacerbate health disparities if consumer language, health literacy, technical literacy, and access to needed technology and technical support are not addressed. Internet and broadband access—enablers of consumer HIT—are lower among older adults, minorities, the physically disabled, and low-income individuals. The potential risks for these groups include lack of access to care, lower health care quality, and medical error. This is very problematic as patients in these populations often have one or more chronic conditions and are often the most in need of care.[iii] Health IT places high demands on the health literacy and technical literacy of health care consumers and may be intimidating to some segments of the at-risk populations. Furthermore, HIT applications are often designed without the active participation of diverse user groups or consideration of their needs and characteristics.

While both categories of potential disparities are important, a considerable effort is in place to help bridge the technology gap between well-resourced and under-resourced providers. Many physicians, hospital systems, and other providers are eligible for incentives and subsidies to adopt HIT. Less attention, however, has been paid to the potential of HIT to unintentionally increase disparities among at-risk groups. Moreover, the great potential for eHealth technologies to narrow disparities in health and health care has not been adequately explored. The remainder of this paper will focus on the risks and opportunities for the use of eHealth in the service of populations at-risk for disparities.
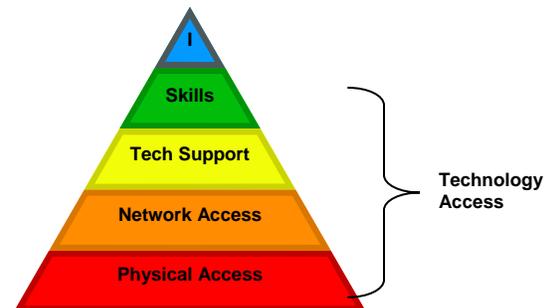
Meaningful Access

Every day, more people get onto the Internet, get broadband from home, send text messages, and use smartphones. But a population equipped with smartphones does not necessarily imply meaningful access to health care resources. Meaningful access has been defined as "timely and affordable access to 'data, knowledge, and tools,' through electronic and traditional media, that enable consumers to make informed decisions and to manage their health".[iv] This complex picture provides a more nuanced understanding of meaningful access. The meaningful access model makes three important points:

1. **Technology access is multi-layered.** Having a computer or smartphone is not enough to produce value. Technology access requires all of the following:
   - Incentive (I need a reason to use the technology.)
    - Skills and confidence (I know how to use these tools, and I'm comfortable doing so.)
    - Technical support (I have the capability to fix technical problems as they arise)
    - Network access (e.g., I have home broadband, dial-up, and or a smartphone data plan.)
    - Physical access (e.g., I have a PC, smartphone, and/or gaming platform.)

2. **Incentives are layered**. Having technology access is not enough to produce value. *Meaningful access* requires all of the following, in addition to technology access:
   - Perceived value (I need to think that it's worthwhile for me to access it.)
   - Awareness (I need to know that it exists.)
   - Accessible (I need to be able to find it, read it, and understand it.)
   - Relevant content, functionality, and social networks (There needs to be something valuable for me to access.)
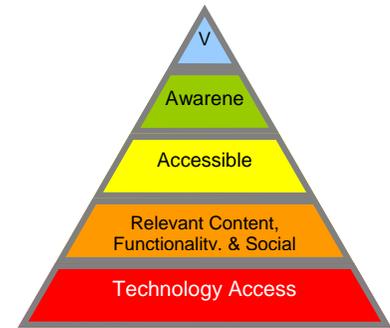
3. **Meaningful access is relative.** The phrase "Digital Divide" may mislead us into thinking of digital disparities as a dichotomy between those with access and those without. Practical strategies, however, need to address the relative nature of both technology access and incentives. For example,
   - Mary has a smartphone but no data plan. She reads at a 5th grade level, doesn't feel comfortable using her phone's browser, and none of her friends are online. She doesn't know what kinds of resources are available through her smartphone.
   - Shawn has the same phone as Mary, but he has an unlimited data plan. He also has high-speed cable access on his laptop at home, another computer at work, and a networked gaming system in his living room. He grew up using computers and is very comfortable using them and troubleshooting any problems that arise. He enjoys an extensive online social network that includes most of the people he knows in person and many he has never met.
   - Mary and Shawn both have access, but they do not have equal access.

A Segmentation Framework

For the purpose of identifying interventions to address eHealth disparities, it is helpful to recognize segments of at-risk populations based on technology access. For example, the people who don't have meaningful technology access (the "have nots") can be segmented into two groups:

1) The **"could haves."** These are people who could have meaningful access if they receive assistance to achieve it. For individuals in this segment, the focus might be on facilitating public internet access, health literacy and technology literacy training, and providing access to valuable online content and services.

2) The **"won't haves."** These are people who won't have meaningful access no matter what is done. While many seniors are heavy Internet users, many may never use the Internet for health or other purposes. Similarly, people with low literacy, especially low English literacy, may be unlikely to use the Internet in the next few years regardless of what a provider might do to try to get them online. For these "won't haves," alternatives to direct eHealth technology access, like telephone service, in-person communication, and print media are potential avenues for outreach services. Health care providers can also support patients' friends and family members who are online, so the friends and family members can use the Internet to help those who are not online.

The **"haves,"** the segment of the at-risk population that has technology access, may require culturally and linguistically appropriate content and other strategies to encourage their use of eHealth technology and to make their access meaningful.

A Look at the Research

A limited but growing body of research answers key questions about at-risk populations and eHealth disparities. Researchers have documented disparities based on race and ethnicity, income, education, age, literacy, disabilities, geography, sexual orientation, and more. The table below highlights select findings on how digital disparities link to health equity concerns. For a more detailed research overview, see Appendix B, "A Look at the Research."

	Study	**Key Findings**
Predictors of Internet Access— Age and Education	Lee, R., 2010	▪ The most significant independent predictors of Internet use are age and educational attainment. ▪ Individuals 18-49 years old are much more likely to use the Internet than those aged 65 and over. ▪ Individuals with at least some college education are much more likely to use the Internet than those with less than a high school diploma.
Predictors of Internet Access— Income	Lee, R., 2010	▪ Individuals with lower incomes are much less likely to report having Internet access; however, the extent to which income is an independent predictor of access is unclear.
Digital Disparities Among the Uninsured	Kaiser Permanente, 2009 (unpublished)	▪ People without health insurance tend to have less access to health care and also less access to technology; however, those who are uninsured and have family incomes over $50,000 have access and usage patterns similar to the insured populations.
Health Literacy Obstacles	Viswanath, K., et al, 2007; Birru, M. S., and Steinman, R. A. ,2004	▪ eHealth technologies generally demand literacy skills that are higher than the average reading level. ▪ Furthermore, data suggest that the high-reading-level material on eHealth tools and materials may uniquely affect certain ethnic minorities with poorer health literacy.
Disparities in Use of eHealth Resources	Sarkar, U., et al, 2011; Roblin,D. W., et al, 2009	▪ After adjustment for population characteristics, African Americans and Latinos had higher odds of requesting a password for the patient portal but never logging on, compared to non-Hispanic whites. The same applied to individuals without an educational degree compared to college graduates. ▪ In another study, researchers found that adults who registered for access to a patient portal were significantly more likely to be white than African Americans, and that those with postgraduate education more frequently registered for access than adults with a high school education or less.

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eHealth Equity & Health Care Reform

Health care reform increases the urgency for health care leaders to address eHealth disparities.

Medicaid Expansion

The Patient Protection and Affordable Care Act (PPACA) will expand Medicaid to nearly all individuals under age 65 with incomes up to 133 percent of the federal poverty line (FPL), ultimately adding about 16 million more Americans to Medicaid rolls. The newly eligible Medicaid recipients are a diverse group that includes many low-income, minority, and chronically ill individuals for whom public and private coverage is unavailable or inaccessible.

Most uninsured adults at or below 133 percent of the FPL are between ages 26-54; adults age 25 and younger comprise a minority. About one-in-six of the uninsured adults at or below 133 percent of the FPL are in fair or poor health. These individuals are at an increased risk of having problems accessing care compared to their counterparts on Medicaid, and about one-third of uninsured adults in this income group have been diagnosed with a chronic condition. [v] Many of the new Medicaid enrollees will have relatively little meaningful access to consumer technologies. In anticipation of the influx of new Medicaid enrollees, health plans and health systems need to carefully consider how eHealth technology can improve or exacerbate disparities.

State-based Health Insurance Exchanges

In addition to the Medicaid expansion, health care reform will change the health insurance coverage landscape in a variety of ways:

- An estimated 24 million people with incomes between 133 percent and 400 percent FPL will be able to purchase health insurance through private, state-based health insurance markets called "exchanges." Exchanges will essentially be marketplaces where individuals and small businesses can purchase health care coverage. As individuals' incomes fluctuate over time, they will move between eligibility for Medicaid and for exchange-based subsidies. The Medicaid/exchange transition will need to be as seamless as possible in terms of health plans and providers available to enrollees. Can Internet-based resources help people navigate these transitions?

- Essential Community Provider (ECP) provisions mandate health plans to contract with ECPs, including community health centers, in order to participate in exchanges. Health plans will need to include ECPs among their providers to participate in the exchange and may wish to have these same providers in their Medicaid managed care plans, as well. Many Medicaid managed care plans already include ECPs in their networks. Does this suggest opportunities to increase access to HIT systems for both the ECPs and their patients?

- Funding will be increased by $11 billion over five years for community health centers – all of which will be considered Essential Community Providers (see above) – and the National Health Services Corps to serve more low-income and uninsured people. Community health centers will have funding to increase capacity to meet the needs of the newly insured, as well as those who remain uninsured. How much of this funding should go toward HIT capabilities?

The transitioning of low-income populations between Medicaid and subsidized exchange coverage presents important challenges for the health sector to minimize negative effects on continuity and quality of care. Coverage transitions may lead to variable levels of coverage in terms of benefits, premiums, and cost sharing, which may lead in turn to greater consumer confusion about costs. Health IT and the flow of patient information across delivery systems will be key components of strategies to mitigate the potential harm of these transitions. Furthermore, state health insurance exchange models tend to focus on Web-based, self-service user interfaces. Will technology access and digital literacy create inequities in access to the exchange?

Steps towards eHealth Equity and Patient-Centered Care

National meetings have been organized to increase awareness of eHealth equity concerns and to identify potential solutions:

Agency for Healthcare Research and Quality (AHRQ)—The AHRQ-sponsored meeting, "Reducing Disparities in Health Care Quality in Under-Resourced Settings Using Health IT and Other Quality Improvement Strategies," was held October 22-23, 2009, at the John M. Eisenberg Building in Rockville, Md. Among the 42 participants were representatives from federal agencies, a state rural health agency, health services researchers with expertise in quality improvement and disparities reduction, patient advocates, provider organizations representing potentially under-resourced health care delivery settings, employer groups, and other organizations. Results of five commissioned papers that assessed the evidence base on using health IT to reduce disparities and improve quality in under-resourced settings were presented and discussed, and meeting participants were assigned to three breakout groups with each group asked to address one of the following themes:

- Infrastructure characteristics that promote quality improvement (QI) and health information technology in under-resource settings.
- Strategies that work across specific disparities (i.e., access, secondary prevention, and patients' experiences of care).
- Suggested models of health IT and QI that can be applied to under-resourced settings. The meeting summary can be accessed at http://www.ahrq.gov/research/dispmtgsum09.htm

The Office of the National Coordinator for Health Information Technology convened a public hearing in Washington, DC on June 4, 2010, entitled, "Using Health IT to Eliminate Disparities: A Focus on Solutions." Several experts provided testimony to address the question: How can the meaningful use of health IT solutions help us reduce disparities? The hearing generated a variety of thoughtful comments that have been incorporated into the public record. The hearing agenda, meeting materials, audio, and webcast can be accessed at: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1472&&PageID=17094&mode=2&in_hi_userid=11673&cached=true#060410

How Can Health IT Promote Health Equity and Patient-Centered Care? That will be the central question addressed on March 7 and 8, 2011, in a roundtable discussion sponsored by the Kaiser Permanente Institute for Health Policy, the Agency for Healthcare Research and Quality and AMIA. The roundtable will convene a diverse group of stakeholders representing community health centers, health systems, health plans, clinicians, and other medical professionals, and consumers in order to:

1. consider delivery system perspectives on disparities concerns related to eHealth technology;
2. prioritize potential public policy and organizational practice changes that decrease disparities in HIT deployment and use; and
3. identify the relevant research priorities for the health sector.

At the roundtable, health care leaders will address several key questions:

- What are the major policy opportunities to promote strategies that decrease rather than increase disparities in HIT deployment and use?

- What are the roles of health plans and health systems in addressing the spectrum of concerns?

- Are there existing initiatives addressing these concerns that can be leveraged?

- How can health plans and health systems use their HIT system data to evaluate and monitor disparities within their patient populations?

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- What steps do health plans and health systems need to take to introduce consumer-centric HIT to the influx of new Medicaid beneficiaries?

Conclusion

The health sector's use of eHealth technology can either increase or decrease health disparities. The unintentional disparities that may arise from eHealth technology use, however, are important concerns that have not been adequately addressed from the delivery system perspective. Actionable strategies are necessary to use consumer information technologies to address the needs of at-risk and traditionally underserved populations. Without an explicit strategy, the risk of health disparities increases because many technology solutions disproportionately benefit populations that already have better health and access to health care resources. Inadequate attention to eHealth equity could lead to some populations receiving systematically lower quality care and service.

Appendix A—Glossary of Terms A

Digital Divide

Definition: The digital divide refers to the gap between people with effective access to digital and information technology and those with very limited or no access at all. It includes the imbalance both in physical access to technology and the resources and skills needed to effectively participate as a digital citizen. Knowledge divide reflects the access of various social groupings to information and knowledge, typically gender, income, race, and by location. Source: Rice, R. E. (2002). "Primary Issues in Internet Use: Access Civic and Community Involvement, and Social Interaction and Expression." In Leah A. Lievrouw and Sonia Livingstone's (Eds.), Handbook of New Media: Social Shaping and Consequences of ICTs (pp. 105-130). Thousand Oaks, CA: Sage Publications

eHealth

e-Health is the combined use of electronic communication and information technology in the health sector. Source: World Health Organization A broad range of elements are covered by eHealth:

- **Computerized Provider Order Entry (CPOE)** – A computer application that allows a physician's orders for diagnostic and treatment services (such as medications, laboratory, and other tests) to be entered electronically instead of being recorded on order sheets or prescription pads. The computer compares the order against standards for dosing, checks for allergies or interactions with other medications, and warns the physician about potential problems. Source: The Office of the National Coordinator for Health Information Technology (ONC)

  Decision-Support System (DSS) - Computer tools or applications to assist physicians in clinical decisions by providing evidence-based knowledge in the context of patient specific data. Examples include drug interaction alerts at the time medication is prescribed and reminders for specific guideline-based interventions during the care of patients with chronic disease. Information should be presented in a patient-centric view of individual care and also in a population or aggregate view to support population management and quality improvement. Source: The Office of the National Coordinator for Health Information Technology (ONC)

  Electronic Health Record (EHR) – A real-time patient health record with access to evidence-based decision support tools that can be used to aid clinicians in decision making. The EHR can automate and streamline a clinician's workflow, ensuring that all clinical information is communicated. It can also prevent delays in response that result in gaps in care. The EHR can also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and public health disease surveillance and reporting. Source: The Office of the National Coordinator for Health Information Technology (ONC)

  Electronic Prescribing (eRx) – A type of computer technology whereby physicians use handheld or personal computer devices to review drug and formulary coverage and to transmit prescriptions to a printer or to a local pharmacy. E-prescribing software can be integrated into existing clinical information systems to allow physician access to patient specific information to screen for drug interactions and allergies. Source: The Office of the National Coordinator for Health Information Technology (ONC)

  Health Information Technology (HIT) – The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making.
  Source: The Office of the National Coordinator for Health Information Technology (ONC)

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- **Personal Health Record (PHR)** – An electronic application through which individuals can maintain and manage their health information (and that of others for whom they are authorized) in a private, secure, and confidential environment. Source: The Office of the National Coordinator for Health Information Technology (ONC)

- **Telemedicine**—For purposes of Medicaid, telemedicine is the use of medical information exchanged from one site to another via electronic communications to improve a patient's health. Electronic communication means the use of interactive telecommunications equipment that includes, at a minimum, audio and video equipment permitting two-way, real time interactive communication between the patient, and the physician or practitioner at the distant site. Telemedicine is viewed as a cost-effective alternative to the more traditional face-to-face way of providing medical care (e.g., face-to-face consultations or examinations between provider and patient) that states may choose to cover. Source: Center for Medicare and Medicaid Services

- **Telehealth (or Telemonitoring)** is the use of telecommunications and information technology to provide access to health assessment, diagnosis, intervention, consultation, supervision and information across distance. Telehealth includes such technologies as telephones, facsimile machines, electronic mail systems, and remote patient monitoring devices which are used to collect and transmit patient data for monitoring and interpretation. While they do not meet the Medicaid definition of telemedicine they are often considered under the broad umbrella of telehealth services. Even though such technologies are not considered "telemedicine," they may nevertheless be covered and reimbursed as part of a Medicaid coverable service under section 1905(a) of the Social Security Act such as laboratory service, x-ray service or physician services. Source: Center for Medicare and Medicaid Services

Health Disparities

Definition: Health disparities are differences in the incidence, prevalence, mortality, burden of diseases and other adverse health conditions or outcomes that exist among specific population groups in the United States. Health disparities can affect populations groups based on gender, age, ethnicity, socioeconomic status, geography, sexual orientation, disability or special health care needs and occur among groups who have persistently experienced historical trauma, social disadvantage or discrimination, and systematically experience worse health or greater health risks than more advantaged social groups. Source: The National Association of Chronic Disease Director, http://www.chronicdisease.org/i4a/pages/index.cfm?pageid=3447

Health Equity

Equity in health is the absence of systematic disparities in health (or in the major social determinants of health) between groups with different levels of underlying social advantage/disadvantage—that is, wealth, power, or prestige. Source: P Braveman, S Gruskin, Defining equity in health, J Epidemiol Community Health 2003;57:254–258

Health Literacy
Health literacy is the degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions. But health literacy goes beyond the individual. It also depends upon the skills, preferences, and expectations of those health information providers: our doctors, nurses, administrators, home health workers, the media, and many others. Health literacy arises from a convergence of education, health services, and social and cultural factors, and brings together research and practice from diverse fields. Source: Colorado department of Public Health and Environment, http://www.cdphe.state.co.us/ohd/glossary.html

Meaningful Use
The American Recovery and Reinvestment Act authorizes the Centers for Medicare & Medicaid Services (CMS) to provide a reimbursement incentive for physician and hospital providers who are successful in becoming "meaningful users" of an electronic health record (EHR). These incentive payments begin in 2011 and gradually phase down.

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Starting in 2015, providers are expected to have adopted and be actively utilizing an EHR in compliance with the "meaningful use" definition or they will be subject to financial penalties under Medicare. The American Recovery and Reinvestment Act of 2009 specifies three main components of Meaningful Use:

1. The use of a certified EHR in a meaningful manner, such as e-prescribing.
2. The use of certified EHR technology for electronic exchange of health information to improve quality of health care.
3. The use of certified EHR technology to submit clinical quality and other measures.

Simply put, "meaningful use" means providers need to show they're using certified EHR technology in ways that can be measured significantly in quality and in quantity. Source: Center for Medicare and Medicaid Services

Meaningful Access

Timely and affordable access to "data, knowledge, and tools," through electronic and traditional media, that enable consumers "to make informed decisions and to manage their health." Source: Missouri Statewide Health Information Exchange—Consumer Engagement Workgroup

Appendix B— A Look at the Research

A limited but growing body of research answers key questions about at-risk populations and eHealth disparities:

Predictors of Internet Access—The gap between those with meaningful access to the Internet and those without is closely linked to socio-economic and demographic status.[vi] The most significant independent predictors of Internet use are age and educational attainment. Individuals 18-49 year olds are much more likely to use the Internet users than those aged 65 and above; those with at least some college education are much more likely to use the Internet than those with less than a high school diploma.[vii]
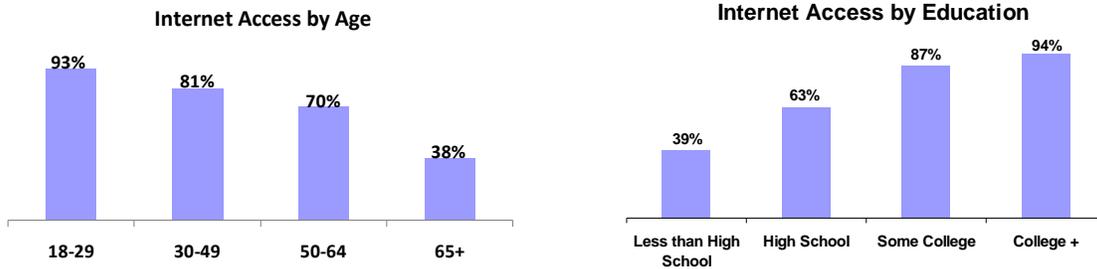
Internet access is also linked to income—those with lower incomes are much less likely to report having Internet access. However, the access gap based on income is not as wide as the gaps based age or education. Furthermore, it is unclear the extent to which income is an independent predictor of access. It may be that education and literacy drive both income and access.
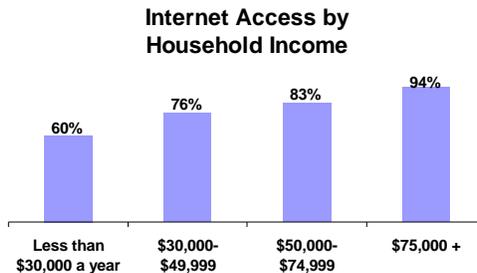
Like income, race/ethnicity correlates with Internet access, but it is not at all clear that race/ethnicity is an independent predictor of Internet access. This contrasts with health disparities data, which clearly show race/ethnicity to be an independent predictor of disparities.

Digital Disparities Exist Among the Uninsured—People without health insurance tend to have less access to health care and also less access to technology. Both access issues correlate closely with annual family income.[viii] Uninsured groups with lower incomes have less Internet access, use the Internet less frequently, and use text messaging less than those with higher incomes. At the same time, those who are uninsured and have family incomes over $50,000 have access and usage patterns similar to the insured populations.

Uninsured	<$20k	$20-50K	>$50K
Any Internet Access	64%	77%	94%
Internet at home	34%	54%	84%
Any broadband or high speed connection	26%	42%	75%

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WiFi at home	5%	8%	19%
Use Internet <1x/day	17%	19%	19%
Use Internet 1x/day	6%	10%	13%
Use Internet >1x/day	19%	29%	52%
Instant messaging	17%	23%	29%
Connected to internet via mobile/cell device past 30 days	6%	9%	19%
Text messaging	37%	48%	62%

These data suggest that strategies targeting low income uninsured populations would best be centered on increasing meaningful access and providing alternatives to those without access, while strategies targeting the uninsured with higher incomes would best be centered on increasing incentives—ensuring that they are aware of content and functionality they consider valuable. (cite)

Populations that Face Health Literacy Obstacles—Literacy is an issue because eHealth technologies generally demand literacy skills that are higher than the average reading level.[ix] Many studies have stated that online patient health information is at a 12th grade level, while the average reading level is much lower. [x,xi,xii,xiii] The graph below from "The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy" in 2006 demonstrates the average health literacy scores of adults by race/ethnicity.[xiv]

Figure 2-4. Average health literacy scores of adults, by race/ethnicity: 2003
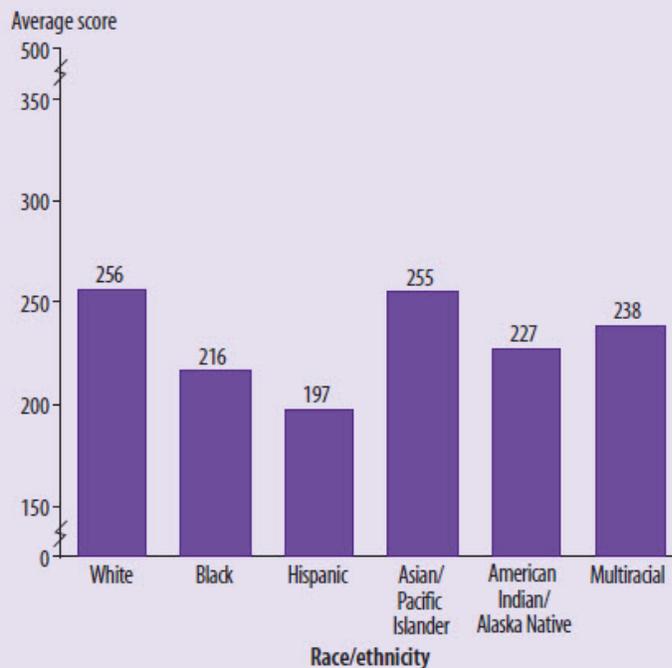
NOTE: Adults are defined as people 16 years of age and older living in households or prisons. Adults who could not be interviewed because of language spoken or cognitive or mental disabilities (3 percent in 2003) are excluded from this figure. All adults of Hispanic origin are classified as Hispanic, regardless of race. The Asian/Pacific Islander category includes Native Hawaiians. Black includes African American, and Hispanic includes Latino.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.

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These data suggest that the high-reading-level material on eHealth tools and materials may uniquely affect certain ethnic minorities with poorer health literacy.[xv] A study on online health information and low-literacy African Americans states, "Literacy may be the most daunting barrier to successful Internet access by low-SES, low-literacy African Americans".[38]

Researchers found that diabetes patients with limited health literacy had higher odds of never signing on to a patient portal compared with those who did not report any health literacy limitation. Even among those with internet access, the relationship between health literacy and patient portal use persisted. The researchers concluded that "although the internet has potential to greatly expand the capacity and reach of health care systems, current use patterns suggest that, in the absence of participatory design efforts involving those with limited health literacy, those most at risk for poor diabetes health outcomes will fall further behind if health systems increasingly rely on internet-based services".[xvi]

Disparities in use of eHealth Resources—There is emerging evidence of pervasive racial/ethnic and educational disparities in use of patient portals. One study found that after adjustment for age, gender, race/ethnicity, immigration status, educational attainment, and employment status, compared to non-Hispanic Whites, African Americans and Latinos had higher odds of requesting a password for the patient portal, but never logging on, as did those without an educational degree compared to college graduates.[xvii] In another study, researchers found that adults who registered for access to a patient portal were significantly more likely to be white than African Americans and that those with postgraduate education more frequently resisted for access than adults with a high school education or less.[xviii]

End Notes

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