Welcome to Health Management Information Systems, Health Information Systems Overview. This is Lecture b.

The component, Health Management Information Systems, is a “theory” component that provides an introduction to health care applications and the systems that use them, health information technology standards, health-related data structures, and enterprise architecture in health care organizations.

Lecture b examines the challenges presented by emerging trends in information technology (e.g., mobility, web services, the Internet, Intranet, and wireless computing), social media, and global communications and discusses the advantages and disadvantages of using the Internet as a platform for health care applications.

The Objectives for this unit, Health Information Systems Overview are to:

• Define the concept of an information system and its characteristics;
• Describe the different types of information systems;
• Describe various types of technologies that support health care information systems;

Additional Objectives for this unit, Health Information Systems Overview are to:

• Examine the challenges presented by emerging trends in information technology, social media, and global communications; and
• Discuss the advantages and disadvantages of using the Internet as a platform for health care applications.

The United States Department of Health and Human Services (HHS 2000) made several points regarding how advances in consumer health informatics are changing the delivery of health information and services, in particular the following: “The convergence of media and emergence of the Internet create a nearly ubiquitous networked communication infrastructure. This infrastructure facilitates access to an increasing array of health information and health-related support services and extends the reach of health communication efforts. Delivery channels such as the Internet expand the choices available for health professionals to reach patients and consumers and for
patients and consumers to interact with health professionals and with each other (for example, in online support groups)” (p. 11-7).

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Some trends in information technology that are creating challenges for health care organizations include Internet, Intranet, Web services, wireless, social media and global communications. Definitions for the first four are provided followed by a discussion of how social media is being used in health care and the effect of global communications after which the challenges will be discussed.

AHIMA (2012) defines the terms as follows:

“Internet: An international network of computer servers that provides individual users with communications channels and access to software and information repositories worldwide” (p. 190).

“Intranet: A private information network that is similar to the Internet and whose servers are located inside a firewall or security barrier so that the general public cannot gain access to information housed within the network” (p. 192).

“Web services: An open, standardized way of integrating disparate, web browser-based and other applications” (p. 359).

“Wireless technology: A type of technology that uses wireless networks and wireless devices to access and transmit data in real time” (p. 360).

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Kaplan and Haenlein (2010) define social media as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, which allows the creation and exchange of user-generated content” (p. 59).

While not originally created with health care in mind, today these media are seen as valuable health care tools. They are used in the health care environment for a variety of purposes including, for example, the use of a social network such as PatientsLikeMe where individuals connect with others who have a specific disorder. Some media are used by health care providers to provide information to their patients. For example, Mayo Clinic uses both blogs and podcasts to discuss diseases, conditions and treatments.

Health care organizations may use social media to assist patients in making informed choices and to build or maintain reputation in the marketplace. Photo videos such as
those found on YouTube are popular. Mayo Clinic has a “Mayo Clinic Channel” where multiple YouTube videos are available for viewing.

The legitimacy of social media has increased as well. Respected health care organizations such as Mayo Clinic and governmental agencies such as the Centers for Disease Control and Prevention (CDC) have established social media centers. For example, CDC (2011) “uses social media to provide users with access to credible, science-based health information when, where, and how you want it” (para.1).

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Many organizations are using the latest communication technologies in order to provide individuals with information and thereby increasing ways to stay connected. For example, there is a broad cultural shift toward using technology and the Internet as a normal part of everyday life. Government policy is placing great emphasis on both health information technology and personal health management for consumers. The integration of communication media means electronic access to health information with Web-enabled telephones, handheld devices, and other emerging technologies. Interactive health communication enables consumers to gather information, make health care decisions, communicate with health care providers, manage chronic disease, and engage in other health-related activities.

This is resulting in a trend towards an increase in the ability to communicate globally. CDC and the National Cancer Institute (2011) define health communication as: “The study and use of communication strategies to inform and influence individual decisions that enhance health” (para. 10). Global communications involves the use of computer networking tools for international communications and information exchange. Some of the focus areas identified by the CDC for global health communications include health communication and marketing strategies, emergency communication, and eHealth. According to the Office of Disease Prevention and Health Promotion (ODPHP, 2012), “e-Health is the use of digital information and communication technologies to improve people’s health and health care. The increasing use of technologies, especially the Internet and mobile devices, to manage health highlights the potential of e-Health tools to improve population health” (para. 1).

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Having described various trends in information technology, what challenges do these technologies and media present? They include privacy and security concerns, liability risk, lack of law or legislation governing the boundaries, lack of payment for engagement, lack of frequent updates, and resistance by health care providers.

While the Health Insurance Portability and Accountability Act or HIPAA contains privacy and security requirements, it does not contain guidelines regarding the transmission of
personal health information over the Internet. However, Subtitle D of the Health Information Technology for Economic and Clinical Health Act (HITECH Act), enacted as part of the American Recovery and Reinvestment Act (ARRA) of 2009, addressed the privacy and security concerns associated with the electronic transmission of health information. Even so, privacy and security issues are still not a part of HIPAA and remain a challenge for health care providers wishing to use the emerging IT trends.

Other challenges include the risk of liability, especially with relation to what constitutes medical advice which goes hand-in-hand with the lack of law or legislation governing designated boundaries for these emerging electronic device or communication technology tools.

Health care providers are also reluctant to use emerging electronic device or communication technology tools in their practices, due to the lack of payment for their time and effort. For example, according to Health Resources and Services Administration (HRSA, 2003), “The absence of consistent, comprehensive reimbursement policies is often cited as one of the most serious obstacles to total integration of telemedicine into health care practice” (p. 2).

Not all web site data may be updated in a timely manner to reflect advances in clinical care. Web sites need to be reviewed and revised regularly or consumers can receive out-of-date information.

Finally, health care providers may be reluctant to get on-board with some of these technologies due to wariness regarding their usefulness. There is also concern over the potential replacement of some person-to-person interactions, and a danger of losing essential benefits of the doctor/patient relationship, which include appreciation of a patient’s needs and personal preferences.

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Let’s take a closer look at the Internet as a platform for health care applications.

According to HHS (2006), “Significantly, there are indicators that Internet access is growing in every segment of the population and that many of these segments are ready to think about new uses of the Internet and other digital technologies for health” (p. XV).
Just how is the Internet affecting health care? Some examples are:

- There is increased use of the Internet to find out information about health care providers and treatment options. Opportunities to select information based on their personal interests and preferences.
- The sponsoring organization provides consumers with tools to develop and maintain their own PHRs.
- E-mail exchange is possible between consumers and health care providers and
- Increased marketing sophistication results in accessibility of health care products for purchase.

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So, what advantages does the Internet offer as a platform for health care applications? Five are listed on this slide and include that implementations are more cost effective and can be deployed quickly, there is little or no need for IT support, the Internet is designed for sharing, and it is a better technology for mobile computing.

For example, some more recent trends involve cloud computing and software as a service, both of which have associations with the Internet. Mell and Grance (2009) define cloud computing as “…a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction” (p. 1). One of the service models described by Mell and Grance is Cloud Software as a Service (SaaS). With this model, “The capability provided to the consumer is to use the provider’s applications running on a cloud infrastructure. The applications are accessible from various client devices through a thin client interface such as a web browser (e.g., web-based email). The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings” (Mell and Grance, 2009, p. 2).

With SaaS, a health care provider would license an application through a subscription, thereby paying for only what is needed. Deployment would be quicker since there is no need to install and run the application on the provider’s hardware, IT support is diminished or eliminated as all ongoing support, maintenance, and upgrades are provided by the vendor as part of the service, connectivity with many stakeholders is easier and access via any internet connection – including a tablet or smartphone, such as an iPhone or Blackberry – is possible.
There are, however, disadvantages to using the Internet as a platform for health care applications. These include the problems associated with keeping personal health information private and secure as well as scalability.

As was previously mentioned, while HIPAA contains privacy and security requirements, it does not contain guidelines regarding the transmission of personal health information over the Internet. However, Subtitle D of the HITECH Act enacted as part of the American Recovery and Reinvestment Act of 2009 addressed the privacy and security concerns associated with the electronic transmission of health information. Even so, privacy and security issues are still not a part of HIPAA and remain a challenge for health care providers.

To be scalable means the system is able to grow with the increase in number of users, volume of data, etc.

Thus, health care providers who use cloud computing services are dependent upon the vendor to “scale” as necessary. The application must not only handle the current base but it must also keep pace with the growth of that base. If the vendor is slow to add computer and personnel resources, then performance degradation is likely to occur.

This unit defined an information system and its characteristics, identified the types of information systems that support the health care enterprise requirements, and described the various types of technologies that support health care information systems. The unit also described some challenges with the use of emerging information technology trends. These included concerns with privacy and security, risk of liability, lack of law or legislation governing the boundaries, lack of payment for engagement, and resistance by health care providers. The advantages and disadvantages of the Internet as a platform for health care applications were also discussed.