

MedDigX: Week 4 Key Concepts

4.2 | The Internet of Things

Internet of Things: a concept in which everyday devices, appliances, and sensors that connect to each other and exchange data over a network. The IoT is an emerging phenomenon made possible by *inexpensive sensors, wireless networks, and cloud computing*.

In healthcare, the IoT may soon be applied to:

- Gather and transmit medical data through wearable biometric sensors.
- Analyze and respond to one's physical environment.
- Automate the data capture and information transfer roles of health professionals, enabling better focus on human interaction.
- Alert patients and providers with information in the contexts where it is most appropriate and applicable.

Interoperability: the capability of different devices and systems to work together.

A key concern surrounding the collection and transfer of data through networks is *privacy*.

4.3 | Health Data, Security, and Privacy

Health Insurance Portability and Accountability Act (HIPAA): a 1996 law that established the standards for protecting privacy and security of personally identifiable health information.

HIPAA regulations protect cloud-based health data, but can sometimes limit interoperability and prevent data exchange among digital health devices and platforms.

Recent research suggests that even HIPAA-compliant, 'anonymized' health information can be personally identifiable, exposing patients to identity theft or breach of privacy.

Context of use: a new approach to health data privacy that, instead of categorical restrictions on access to personal health data, re-frames and tailors rules of access based on who is using health data, how they obtained it, and for what purpose.

4.4 | Digital Health and the Aging Population

By 2060, 92 million Americans will be 65 or older. As more senior citizens adopt technology, digital health may have a role in helping them age in place.

Seniors use the internet, smartphones, and other technologies less than other adults, but are using such technologies at an increasing rate, especially 'new' senior (ages 65-69).

Digital health and information technologies can address end-of-life issues by:

- Facilitating advance care planning by improving ease of use, storage, and retrieval of documents.
- Promoting end-of-life health literacy.
- Enabling more effective use of palliative care.
- Encouraging and helping patients to discuss end-of-life preferences with loved ones.

Digital health tools can also improve elder care by:

- Tailoring content to match individual preferences.
- Adapting to diverse cultural norms.
- Reaching historically underserved populations.
- Responding to contextually specific cues.

4.5 | Managing Information in the Digital Age

Medical Crisis of Knowledge: the idea that the rate at which information is collected and knowledge is generated exceeds the human capacity to process and understand it.

Historically, institutions and people like academic journals, librarians, and educators filtered information. In the Internet Age, the individual is responsible for filtering an expanding volume of content.

Twitter is one resource that can be used to filter and manage information inputs.

The Digital Age will change information management in several ways:

- The transition from *people* finding *information*, to *information* finding *people*, based on positional and situational *context*.
- The transition from *memorizing* to *accessing* information.
- The introduction of *artificial intelligence* for decision support.

4.6 | Digital Literacies

Literacy: the broad skill sets needed to function; defined by Howard Rheingold as, “skill plus social competency.”

Physician literacies in the Digital Age include:

- **Networked awareness:** the ability to engage in collaborative practice and learning, as part of a broad network of collective knowledge.
- **Input management:** the ability to balance large amounts of information to filter, process, and share information.
- **Content creation:** the ability to make digital information resources, such as blogs or videos, for peer or public consumption.
- **Translation:** the ability to present medical knowledge to an audience without an education and background in the health professions.
- **Medical mindfulness:** the ability to balance digital tools and information inputs with an attention and responsiveness to patients.

4.7 | Narrative Medicine

Doctors tend to focus on *biomedical aspects* of disease, while *patients* often focus more on illness, the *social context* of disease.

A challenge in digital health is to transform *data* into *stories* that resonate with *all* healthcare stakeholders.

Evidence-based medicine: the idea that medical decision-making should be based on data from research and clinical outcomes, rather than personal experience, tradition, or intuition.

Narrative medicine: a field of practice in medicine that uses stories to understand health experiences, contextualize biomedical data, and guide patient care.

4.8 | The Future of Medicine

The future of medicine will be:

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|---------------------------|-------------------------|--------------------|
| – <i>Patient-centered</i> | – <i>Individualized</i> | – <i>Real-time</i> |
| – <i>Networked</i> | – <i>Precise</i> | – <i>Mobile</i> |

As technology extends and replaces elements of contemporary medicine, patients’ and providers’ roles will be defined by the human elements of medicine that cannot be automated.