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Making Digital Health Equitable

William Ed Hammond

Director, Duke Center for Health Informatics

Duke University

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Technology growth is exponential

- Moore's Law – faster, more powerful, less expensive computers
- Wireless, global communications that instantly connect the world
- Small, mobile devices that are ubiquitous
- More knowledge than humans can use
- The ability to aggregate all data about all persons from all sources
- A rich mixture of media to enhance our understanding of disease and its treatment

Telehealth and telemedicine

- Began as a very specialized field, separate largely from traditional medicine
- Transition those words to virtual care. Covid forced that transition.
- Physical buildings add a high overhead to the care process.
- Virtual care is becoming the preferred method of interaction when possible by most patients.
- Home hospitals, home visits, and virtual care will have a major impact on the system. Economics will be a major driver.

Digital Health

- Digital Health is the convergence of digital technologies with health, healthcare, research, and living in a society.
- Relevant data now includes not only clinical but genetic, behavioral, social, economic, and environmental data.
- It makes care and treatments more personalized and precise.
- It enables the delivery of the right data at the right place about the right person to the right person at the right time.

Key Elements for Enabling Digital Health

- Interoperability – data must be able to flow freely without a loss of meaning and understandability
- Data standards – a universal set of data elements; HL7® FHIR ® for data transport; standards for APIs (SMART on FHIR)
- Integration of all sources of data – EHRs, wearables, sensors, images
- Real-time capture of data outside the traditional health environment
- Integration of AI into the interpretation of real-time data and performing the correct actions

Integration of Stakeholders and Functionalities

- Patients, practitioners, researchers, communities, application developers, medical device manufacturers, distributors, standard developers, drug manufacturers, federal agencies, and policymakers.
- Create new trusted, respectful, and valued relationships between providers and patients.
- Support integration of genomic, social, economic, environmental, behavioral, clinical, and geographical data (location).
- Extend the appropriate use of decision support algorithms that have been properly vetted.
- Integrate the use of AI into diagnosis, data visualization, treatment, evaluation, and outcomes.

Future State - devices

- Mobile devices – smartphone apps for communication and data collection
- Wearable devices – collecting personal data in real-time, analyzing that data, and taking appropriate actions. Those immediate actions will be life-saving.

Future state – Artificial Intelligence

- The volume of data, the types of data, and the rapid changing of knowledge in all aspects of health and health care overwhelm the ability of humans to use all available data and make decisions.
- AI provides the ability to bring together many types and forms of data together including imaging modalities, digitalization of health data with provenance, next-generation sequencing, wearables, the Internet of things, SDOH, and other sources of data.
- AI can pull all these data together and make decisions of the collective mix.
- Computers will share gained knowledge with the network of computers.

Future state - equity

- Digital Health has the potential to widen the gap between economic and social members of society. Equity demands that technology does not isolate components of our society. We must make sure that every person has Internet access, a device with which to access the Internet, and the ability and motivation to use the device for their health.
- Health literacy must be taught from kindergarten through all of life.
- Personalized, precise, and accessible health and healthcare to all persons, globally, is a must in a future state.

A Vision of the Future State

- The future health system focuses on the patient as an individual and a partner in health and healthcare.
- The systems have removed barriers to access and understanding.
- Technology has integrated the use of multiple types and sources of data. Interoperability enables data liquidity.
- Community involvement is providing access to healthy food sources, transportation, exercise areas, public parks, and other health-enabling resources.
- Digital biomarkers and digital phenotypes provide AI-driven decision-making resources.