

Future of Telehealth Workshop

Breakout Session 1: Developing Next Generation Telehealth Tools and Technologies

from patients, systems, and data perspectives

3 Questions

1. What are the high impact topics?
2. What are the barriers to progress?
3. What can NIH, and specifically NCRRT, do for the future of telehealth?

1. What are the high impact topics?

- Explosion of digital devices for remote, out-of-hospital monitoring for disease/condition prevention, diagnosis, management, consultation, and treatment.
- Examples:
 - Video and Voice over IP integrated systems for medical/surgical consultations.
 - Video reminder system for patient behavior changes.
 - Way-finding tools for persons with sensorial disabilities.
- Expansion of clinical bioinformatics and data integration into EHR/EMR using devices to acquire physiologic and other patient data.

1. What are the high impact topics?

- System engineering approach to integrating telehealth opportunities in health care entities.
 - Increasing system complexity in function, integration, networking interoperability, security, technology failure management, assurance, certification, reliance on software, and usability.
 - Cyber Physical Systems (CPS)
- Audio-Video Teleconferencing maturing and expanding for provider-provider and provider-patient interfaces.

1. What are the high impact topics?

- Functional connection of multiple available technologies for research and health care delivery process improvement.
- Role of Social Networking and mobile communication technologies in underserved and remote populations.
- Mobile and Home Telehealth: Cell Phone technologies to allow seamless connectivity through Social Networking tools among those taking care of a patient: patient, case manager, providers, and patient caregivers for monitoring, education, medical/surgical consultation, and management.

2. What are the major barriers to progress?

- Limited access and limited data flow: Data flow into practice and hospital centers is strictly regulated, making the main data repository's (EHRs/EMRs) difficult to access and utilize for their true value with ongoing data mining and automated decision support.
- Proliferation of stand-alone systems, non-integrated data, and disparate databases.
- No standards for technologies and lack of interoperability limiting data sharing, utilization, and comparison of data, algorithms, and approaches.
- Communications vendor and vendor resources are limiting expansion of applications and affordability for cell phone text and data transmission

2. What are the major barriers to progress?

- Issues with Security, Privacy, & Trust in the collection, compilation and access of data.
- No clinical standards for automated decision support, such as agreement in alarm and trend setting of devices.
- No standard for the accuracy of data collected and transmitted.
- Time and cost limitations for improved validation and certification within computerized telehealth systems.
- Sustainability of successful telehealth programs and resources.

2. What are the major barriers to progress?

- Limited clinical provider and other end-user input in clinical utilization parameters of technology development.
- Limited funding opportunities for data analysis, integration and automated decision support.
- Limited financing of implementation, maintenance, and sustainability of technologies.

2. What are the major barriers to progress?

- End User Adoption:
 - Require culture and behavior changes for usage and reliance on telehealth technologies.
 - Lack of standard metrics for quality of service.
 - Lack of integration of technologies, interoperability, and standards, and limited financial support to adopt technologies.
- Limited Clinical Provider time to respond to multitude of telecommunications from patients and to enter data into EHR/EMR.

3. What can NIH or others do for the future of telehealth?

- National leadership role to facilitate collaborations among stakeholders
 - Provide Multi-stakeholders Meetings with focused deliverables.
 - Provide funding opportunities to bring multiple stakeholders together.
 - Open testbeds.
 - Inventory of freeware telehealth software and other telehealth resources.
- Funding opportunities for behavioral studies for adoption of telehealth technologies, change management, communication, and information dissemination.

3. What can NIH or others do for the future of telehealth?

- R&D for development of standardized “translational” platforms that integrate Telehealth data for digital devices into EHRs/EMRs, such that the data may be studied in relation to other data for automated decision support.
- R&D in Interoperability of Telehealth Systems
 - Interface technologies and tools based on formal methods
 - Platform independent telehealth systems
 - » Virtualization

3. What can NIH or others do for the future of telehealth?

- R&D for Security, Privacy and Trust Management of Telehealth Systems.
- R&D for relational automated decision support systems that view several real-time or near real-time datasets simultaneously for chronic disease states, to assist providers with timely detection of outliers.

Prepared by the Breakout Session 1 Team

- Michael J. Ackerman, NLM
- Lawrence Burgess, U. of Hawaii TRI
- Rosemarie Filart, NCRR
- Insup Lee, U. of Penn, CIS
- Ronald K. Poropatich, US Army Med.
Res. & Mat. Command