



# Fast Forward: Technology Serving an Aging Population

## *Telemedicine, Telehealth and the CIO*

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# *Telemedicine is...*

...provision of health care with technology  
when distance separates the provider from  
the patient.



## ***2 Primary Types***

- Interactive consultation with live audio and video (teleoncology, tele-mental health)
- Store-and-forward with still images or data (tele-dermatology, home telehealth, ultrasound)



# *TeleOncology Consultation*





# ***School Nurse using a Digital Otoscope During an Interactive Consultation***









# *Connectivity Solutions*

- Previously used PRI or BRI lines (some POTS lines for home telehealth)
- Transitioning to IP connections
- Dedicated T1s or state network connections preferred for video (Kan-ed in Kansas)
- VPNs or virtual routing also possible
- Some Internet 1 or DSL connections in use but not preferred for video



# ***General Specs for Video Consultation***

- 384 kbps or higher preferred
- Quality of Service (QoS)
- Encrypted
- Private or dedicated connection (no I1)



# ***Trend toward Home Telehealth***

- Home Telehealth
  - Remote management of chronic illness
  - Expected to grow significantly due to aging population
  - Mostly data transfer but can include video
  - POTS line or broadband is most often sufficient
  - Wireless monitoring devices also becoming popular
  - 24-hour reliability is necessary



# *Typical home unit*

**Blood Pressure Monitor**



**Glucose Meter**



**Pulse Oximeter**



**Medical Scale**



**Peak Flow Meter**



# *Touch screen interaction*



# Glucose monitoring device





# *Answer series of simple questions*





# *Automatic blood pressure*





# *Integrated Video/Stethoscope*







## ***A few statistics....***

- Home care costs in 2003 were \$40 billion, 60% of which is public funding (Center for Medicare and Medicaid Services)
- CHF patients using telehealth experienced a 73% reduction in hospitalization and ER visits and an 80% reduction in total bed-days as compared to standard care (also public funds) ([Mercy Healthcare, 2001](#)).
- Another study demonstrated a 28% reduction in cost for home telehealth patients in 6 months.



# ***Veterans Administration Case Study***

- The VA recently invested \$20 million in 15,000 home telehealth monitors for veterans
- It expects to have 50,000 in place by 2009
- Has cut patient care cost by 1/3 (public funds)
- Each nurse monitors vitals on 150 patients
- Patient satisfaction levels are over 90%

(Stephen Heuser, Boston Globe, 2006)



# ***Health Information Exchange (HIE)***

- Secure storage and transmission of patient data for clinical care
- State and national data repositories
- Labs, pharmacies, clinics, hospitals
- Integration with electronic health records (EHR)
- Necessary standards and interoperability issues
- Primary component of National Health Information Network (NHIN)
- Rand Corporation predicted \$81 billion annual savings from national EHR adoption

# Integrated Desktop

**Select Radiology Patient Exam - Netscape**

File Edit View Go Communicator Help

Back Forward Home Search Places Print Security

Bookmarks Location: <http://www.rad.kumc.edu/cgi-do>

The following list is a list of exams for the requested horizontal lines. If there are images available for the displayed. If there is a movie reel icon, it represents exam (sorry, no thumbnails are available for the cine click on the bar labeled "View Report". To view an i

**GIF image 571x716 pixels - Netscape**

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Back Forward Home Search Places Print Security Reload

Bookmarks Location: <http://www.rad.kumc.edu/patimg/70/S510PA01.GIF>

**EKG Tracing Display - Netscape**

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Location: <http://clinweb/Scripts/TK/EKG/ekg1a.idc>

What's New? What's Cool?

Pt ID: demo1; Pt name: Doe, John ZZ; Time: 1996-11-20 14:37:59.000

**EKG Tracing Display - Netscape**

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Location: <http://clinweb/Scripts/TK/EKG/ekg1a.idc>

What's New? What's Cool?

Pt ID: demo; Pt name: Doe, Jane ZZ; Time: 1996-11-20 15:06:13.000

**Click on the EKG lead to ZOOM IN, click again to ZOOM OUT.**

**Click on the EKG lead to ZOOM IN, click again to ZOOM OUT.**

<< Back to the list of available EKGs (Netscape Navigator ONT V)



# *Integrated Desktop Video*





# ***Network Support***

- Robust institutional network
- Multi-point control unit (MCU)
- Video firewall
- Quality of Service
- Global device management and global directory



# ***Important Role of State Networks***

- Access to care
- Assist the growing, older population
- Reduce hospitalizations and ER visits
- Store and seamlessly transmit patient data
- Make health care more efficient
- Improve quality
- Reduce costs



# ***Important Role of CIO***

- Recognize value of video and necessary QoS
- Recognize growth of technology in health care
- Advocate for networks as being critical state infrastructure just like highways and public works
- Interoperable technologies and platforms
- Security and privacy are paramount



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