California Telehealth Resource Center

Presents:

Telemedicine Technology
Low Cost Solutions

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Uh Oh, Tech Talk Coming

- Please turn **on** your cell phone ringers as this will help keep the audience awake…

- To assist you in staying awake, I will call on you for answers so you better pay attention… Really, I will…
Experience in Telemedicine

- 17 years with the University of CA, Davis

- **Director of Technology**
  - Managed
    - Technical Team
    - Distance Education Team
  - Seen over 11 thousand patients in 35 specialties
  - Setup Telemedicine Programs
    - Urban and rural hospitals and clinics
    - PICU, NICU, OR, ER, County Jails, Prisons, Parole offices
  - Designed Telemedicine Systems
    - 2 Patents on Telemedicine Systems
    - POTS to Satellite Communications

- **Director of the Telemedicine Learning Center**
  - Trained over 800 Clinicians on how to develop their own telemedicine program
  - Developed classroom design & course curriculum
Experience in Telemedicine

Intel Corporation

Senior Management / Engineer

- In charge of Telemedicine efforts worldwide
- Designed and deployed Telemedicine programs with World Ahead
- Engineer on Telemedicine medical devices

Intel Receives FDA Market Clearance on In-Home Medical Device for Management of Health Conditions

The Intel® Health Guide Connects Patients and Their Care Teams for Personalized Care Management at Home

SANTA CLARA, Calif., July 10, 2008 – Intel Corporation today announced the receipt of 510(k) market clearance from the U.S. Food and Drug Administration (FDA) on Intel’s personal health system, the Intel® Health Guide, a care management tool for healthcare professionals who manage patients with chronic
Welcome to Telemedicine.com

We are worldwide Telemedicine experts, with over 20 years' experience in every aspect and phase of conceiving, creating, sales, installing, training and supporting Telemedicine projects throughout the globe. We can provide you a total Telemedicine solution, hourly Telemedicine consulting, or assistance at any phase of your Telemedicine project. To learn more about us, click here.

Contact us! mail@telemedicine.com or 530.676.0421

Click Here for Telemedicine Job Opportunities

Looking for a physician that specializes in Telemedicine? Check out our Worldwide Telemedicine Directory!

DEVELOPMENTS IN TELEMEDICINE

Medical professionals need technology: Ability to cross state lines vital. Concord Monitor. Yet the use of telemedicine is handicapped. Doctors are prohibited from treating patients across state lines unless they are licensed in both states.

Harnessing the black hole of health device data. SmartPlanet. Most health monitoring can be done automatically by smart electronic systems that understand a patient's overall condition.

October 2012

Telemedicine.com CEO Meets with the FCC Chairman!

Last month FCC Chairman, Julius Genachowski, visited with Telemedicine.com CEO, Daniel Kurywchak, and members of the California Telehealth Network at Barton Health in South Oroville, CA.
Experience in Telemedicine

Telemedicine.com, Inc.

- Telemedicine Systems and Medical Peripheral Sales
- Telemedicine Installation and Training of Physicians and Technical Staff
- Telemedicine Custom System Development
- Telemedicine Support
- Developed Hundreds of Telemedicine Programs Worldwide

Worldwide Telemedicine Deployments:

- USA
- Brazil
- China
- India
- Lebanon
- Nigeria
- South Africa
- South Korea

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Goals of this talk

- Discuss various low cost solutions available in the field of Telemedicine
- Educate you on when is the right time to introduce low cost solutions and how to select the right device
History

Blackboard & Chalk

Whiteboard & Dry Erase Markers

Are you still holding chalk?
Show old legacy video systems, and why now we can use PC’s.

Slide show how can you keep your legacy video based telemedicine devices.

Wireless issues

Printing issues

Now susceptible to viruses and software corruption

No mulitpoint on the system
Current Hardware Solutions
Video Conferencing Systems
Low Cost Hardware Solutions
Smartphones, Laptops, Tablet PCs, etc.
High/Low Cost Hardware Solutions

Video Conferencing Systems

**Cons**

- Only wireless network access depending on the device
- Susceptible to viruses attacks
- Software corruption
- No video inputs for medical peripherals
- No file saving capabilities
- No ability to convert files to other formats such as PDFs
- EMR support
- No automated video input selection
- No local FECC
- Printing issues
Standard Cable Connections

- **Composite (RCA) Audio**
  - White and Red

- **Composite (RCA) Video**
  - Yellow
    - Chrominance/Luminance
    - Ground

- **S-Video**
  - 4 pins
    - 1 Chrominance
    - 2 Luminance
    - 3 & 4 are grounds
Standard Cable Connections

- Component Video
  - R – Red
  - G – Green
  - B – Blue

- HDMI
  - Includes audio and video

- HDMI to DVI
Transcoder

- S-video or composite to USB
Low Cost Network Solutions

California Telehealth Network

- A state wide broadband network dedicated to expanding health care access in rural and medically underserved communities
Low Cost Software Solutions

- Blue Jeans
- Clearsea
- Real Presence
- M100
- Ardadin
- Vsee
- Iocom
- Vidyo
Big Myths in Telemedicine?

- “Technology, it just works”
  - Network Infrastructure
  - LAN
  - Wan
  - Bandwidth
  - Utilization
  - QOS
Should you make the switch to wireless?

- Considerations
  - What will be on the wireless network
  - Broadband
  - Utilization
  - Latency
  - QOS
  - Floors, walls, windows, etc.

- Spectrum analysis required
Make the Connection
Basics of Electronics
Flows just like water

1 - “Video Out” of the Medical Peripheral

2 - To “Video In” on VC

3 - “Video Out” of the VC

4 - “Video In” to the Monitor
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  - Includes audio and video

- **HDMI to DVI**
Choosing Medical Peripherals

- Specialty
- Current video system
  - Audio/video connections
  - Standard Definition
  - High Definition
  - Many of the new VC systems don’t even have composite and s-video connectors any more.
- What system does the site you are connecting to have?
  - Electronic Stethoscopes
What is Bluetooth?

- Bluetooth wireless technology is built into a wide range of products, from cars and mobile phones to medical devices and computers. Bluetooth technology allows you to share voice, music, photos, videos, and other information wirelessly between two paired devices. (2400–2480 MHz)
What is Bluetooth?

- The biggest difference between Bluetooth technology and devices like FM radios and TV is distance. Radios and TV are meant to broadcast to many people over miles or kilometers. Bluetooth technology sends information within your own personal space, which is called your Personal Area Network or "PAN" at distances up to 50 meters (164 feet).
  - **Class 1:** range up to 100 meters (in most cases 20-30 meters)
  - **Class 2:** range up to 30 meters (in most cases 5-10 meters)
Make the Switch Mobile Platforms

- Are you ready to make the switch from high-end video conferencing systems to laptops, ipads, and smart phones?
  - What specialties do you plan to support?
  - Texting medical data?
  - No physical inputs available, must use wireless.
  - What medical peripherals do you currently have?
    - Are they blue tooth enabled?
  - Do the sites you connect to have mobile technology and using the same applications. May or may not be an issue.

- Cloud Computing
  - Patient data storage – risk management
  - All data images are on the cloud
    - No local storage
Future of Telemedicine Technology

- Wireless handheld devices designed specifically for Telemedicine with embedded sensors
- Wider selection of Bluetooth medical peripherals
- Cloud Services
- Healthcare Internets like the CTN in each state connected together
- Improved cellular speeds
- Home health systems that tie-in with cable TV subscriptions
Thank You, Questions?
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