Establishing a Global Telehealth Service: Case Perspectives in Latin America

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Disclosure

Specialty Telehealth Services, Inc.

- President and financial interest
Objectives

- Describe the evolution of Telehealth technology and applications based on our experiences in the region

- Share implementation lessons and operational tips when implementing distributed Telehealth networks

- Describe educational uses and potential impact of a Latin American Regional Stroke Network

- Demonstrate a live Telehealth system and Response Center operations
Topics

- Our Background
- Motivation and Opportunities
- The Challenges
- Implementation
- Questions and Answers
- System Demonstration
Development Timeline

1990
TV Uplink Services - Brazil
Broadcasted to the U.S., Latin America, and Europe

2006
Family member suffered stroke

2005
Telehealth Solutions R & D
Telemedicine, Tele-education, Teletrauma, and Teleradiology

2011
Government Contract

2012
Brazilian Olympic Team

2013
Telestroke Network
Latin America
Our Background

- Satellite and cable TV uplink services provider and operator (Brazil, US, Latin America, Europe (1990 - 2005)).

- Implementation of Telehealth solutions using wide-coverage satellite (Telemedicine, Tele-education, Teletrauma, and Teleradiology).

- STS operates a Response Center in Miami, FL USA (Teletrauma and Telestroke to US, LatAm, Europe).
Teletrauma and Tele-education

Ryder Trauma Center - Miami, FL - USA 2006-2008

Demonstration of Remote and Main Hospital Installations

(Clinical Case Videoconference and Live HD Video Transmission)
Brazilian Olympic Telemed System

STS Response Center - Miami

University of Miami Specialty Doctors

Hospital into Trauma - Rio

Hospital Samaritano General - Rio

Hospital ABBR General - Rio

London Olympic Venues

Crystal Palace Training Center London

King’s College Hospital - London

20 (Doctors+Physiotherapists)
(10 Smartphones + 10 Tablets)

Cellular/WiFi

E-mail+Telerad

VC + Phone

LONDON 2012
WSC 2012 - Latin American Telestroke Network
Motivation and Opportunities

- Interest in applying international satellite and business experience to establish Telemedicine networks for tele-education, public health and disaster management uses.

- Family event of a stroke case in São Paulo 8 years ago → Major **DISABILITY**

- Conjunction of favorable events in 2011/2012
  - High level of broadband internet penetration
  - Availability of standards-compliant imaging access
  - Growth of Telestroke networks in the USA
  - Technological developments
    - ↑ Microprocessor speeds
    - ↓ Costs and stable tablets/PCs
    - ↑ Deployment of 4G/LTE cellular networks
Challenges, Implementations and Lessons Learned

- **CASE I** - Teletrauma and Tele-education

  - **Equipment characteristics:**
    - Used mainly by the satellite and broadcasting industries,
    - Large satellite antennas and no broadband Internet,
    - High cost per systems and asymmetrical links (↑dowlink / ↓uplink rates), 1 channel HD video encoder ~ $50K/60K,
    - Emerging HD Video Conference Codecs (~2006/07),

- **Lessons:**
  - High cost to build one-way tele-education network with simultaneous teletrauma capabilities,
  - Equipment required more training for doctors to become comfortable with technologies,
Challenges, Implementations and Lessons Learned

- **CASE II** – Remote Clinics and Brazilian Olympic Telemed System

- **Equipment characteristics:**
  - HD Videoconferencing hardware more common,
  - New software Codecs – lower costs, faster and scalable deployments (highly dependent on servers and VC bridges)
  - Moderate cost per systems, growth in broad band Internet availability - US and parts of Latin America - (mainly with the use of cable modems),

- **System requirements:**
  - 24-hour Telemed response for Brazilian Olympic Team
  - To provide response coordination and operations using WIFI and LAN and very limited 3G/4G network
  - To provide imaging sharing capabilities among sites
Challenges, Implementations and Lessons Learned

- CASE II – Remote Clinics and Brazilian Olympic Telemed System

- Lessons:
  - Mandatory site survey and event pre-planning (reduce connectivity problems, maps limitations),
  - Constant Testing specially when operating multiple platforms (Hardware VC, Robots, Cellular/Satellite Phones, Tablets, and PC’s),
  - This system can be scaled to provide concurrent emergency and disaster support (additional uses may lower overall deployment costs),
CASE III – The Case for a Latin American Telestroke Network Competing Indices in Latin America and Brazil

- Brazil ranks extremely high in risk factors for stroke,
- Brazil highest TV viewership times → Physical Inactivity → Obesity, High BP, Diabetes → Development of CVD,
- Brazil had very high cellular phone penetration over last 5-7 years (Surpassing Korea’s rates),
- Brazil has very high broadband internet penetration (16.8 Million subscribers 2011),
- Brazil had 129,000 stroke deaths and 11 years of disability (DALYs) lost per 1,000 population.
TV Viewership Times

From Instituto Brasileiro de Geografia e Estatística (IBGE 2008) Panoramic Health Study in Brazil: (2013 estimate - Population ~ 200 Million)

“Out of a total population of 189 million, 175 million people (92.4%) had a habit of watching TV, with 75.2 million of them (42.9%) watching TV for over 3 hours a day. 56.2 million (29.6%) declared using a computer or videogame with 28.8% of them using it for a duration of over 3 hours.”

From Francine Kaufman MD, healthychildren.org:

“Watching TV, surfing the internet, and playing video games don’t count as exercise. The time your child spends in front of a monitor should be kept to a limit. Some researchers recommend no more than 1 hour of screen time a day. The risk of obesity increases when your child watches more than 2 hours of TV per day.”
Brazil - Cellular Phone Penetration

Cellular Phone Subscriptions in Brazil (~272 million Jan 2014)

Brazil - Broadband Penetration

Fixed Broadband Internet Subscribers in Brazil

The Opportunities

- Brazil has the technological infrastructure to support new-age telehealth delivery
  (Mexico, Peru and Chile present similar trends)

- Brazil has very high cellular phone penetration with strong growth over last 5 years
  (similar trends for most of Latin American Countries)
Our Challenges

- How fast can we use these successful indices to our Telehealth advantage?
- Can we reduce the burden of disability from stroke and implement telehealth with similar success?
- Can we do it fast? (How many clicks away?)
- Can these networks support good cases for Telestroke, Teletrauma, and Tele-Education?
Latin America Telestroke Network and Implementation

- Start with smaller number of sites in areas of greatest positive health outcomes
- Decide on adequate cost of on-site equipment
- Shortest time to the implementation
- Constant mandatory site survey and event pre-planning
- Testing especially important when operating multiple platforms (VC, Robots, Phones, Tablets, and PCs).
Forms of Intervention

- Education (recognizing symptoms) and behavior modification (schools, media, cultural changes),

- Pre-hospital personnel training (EMS and Emergency Clinics) and mobile Telestroke,

- Hospital-level response with Telestroke systems
  - Training of Stroke Teams
  - Development of Primary and Comprehensive Stroke Centers
  - Certification similar to that obtained in the US
Telestroke Network Components

- Motivated Stroke Teams
  - Doctors, nurses, and protocols
- Videoconferencing Collaboration System
- Teleradiology Collaboration System
- Training
Why do we do it?
And Time is BRAIN!
References


References


Thank You!

Orlando Vallone Junior
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