Telemedicine for Stroke: Technology is only the beginning

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www.twitter.com/strokeprevent
Faculty Disclosure

No Disclosures
Maimonides Stroke - 2004

• New 8 bed stroke unit
• 700 bed hospital
• 200 ischemic strokes / year
• No neurology residency
• No pre-existing stroke program
• One CNS for stroke
• One stroke neurologist, lives in Manhattan
• No consistent Neurology attending coverage
The Road to Brooklyn
Discussing shadows in a field, an American sage once famously observed, “It gets late early out there.”
Telestroke Program

Neurologic Examination via telestroke: Feasible and Reliable

- Germany (kappa=0.85-0.99) Stroke. 2003 Dec;34(12):2842-6
- REACH (Georgia) (r =0.95 p<0001) Stroke. 2003 Oct;34(10):e188-91
- Stroke DOC (UCSD) (r=0.93) Neurology. 2005 Mar 22;64(6):1058-60
- Efficacy of site-independent telemedicine in the STRokE DOC trial: a randomized, blinded, prospective study. Lancet Neurol 2008; 7: 787–95. - The correct tPA decision is made more often when consulting via telestroke vs. telephone
Uses of Telestroke

- Provide Neurological expertise
- Provide Emergency room coverage during off hours
- Provide Emergency coverage for physicians in private practice during office hours
- Reduce the physical burden on Neurologists for acute stroke coverage
Telestroke - 2004

- Expensive systems requiring dedicated videoconferencing equipment
- Systems requiring special types of communications lines (ISDN)
- No ability to use PCs to access systems
Telestroke - 2004

- Need camera that can be controlled remotely and zoom, pan
- Need hospital administrators to accept the idea
- Need patients to accept the idea
The Design of a Telestroke program is Local, and is no different from any other aspect of your stroke program
Telestroke: Step by Step

- Institutional Commitment
- Planning your system
- Evaluating Vendors
- Installation
- Training
- Testing
- Clinical Use
Institutional Commitment

• Financial
  – Purchase and Support (long term)
• Administrative
• IT
• ED leadership
Institutional Integration

• IT
  – Security
  – Support and Access for Remote Users
• Radiology
  – PACS integration
• ED
  – Safety and security of system
Evaluating Vendor

• Track Record
  – References
• Support for similar institutions
  – Academic or Clinical Use
• Compatibility with IT infrastructure
• Features
Evaluating Vendor

• Include all participants
  – ED leadership
  – IT
  – Neurology / Stroke

• Demonstration over your infrastructure

• Fit the system to your proposed usage
Planning...

- Remote users
- Local staff / roles
- Location
  - Fixed vs moveable
- Security
- Policies
- Protocols
Telestroke: Policies

- Who does the exam?
- Who turns on the camera?
- Who will give tPA? Who writes order?
- Who monitors patient during infusion?
- How is the patient/family introduced to telemedicine?
Training

• ED Staff
  – Level of training on equipment
  – Examination protocol

• Stroke Neurology
  – Documentation
  – Working with onsite staff

• IT
Testing

• Each user should test system on their equipment from their preferred location
• Problems with image quality, connections, software should be identified prior to ‘going live’.
Clinical Use

- Don’t go live too early
- Simulated patients
- Record and review sessions
- Use checklists
- Run in parallel
- Limited Use
Remote Users - Functionality

• Audio
• Video
  – Control of camera
  – Ability to record
• Two way
Telemedicine

• At least 17 studies have reported that telemedicine use in acute stroke is both feasible and safe.

• Telemedicine systems were associated with an increased use of IV TPA

*Int. J. Stroke, 2006 Nov;1(4):201-7*
Uses of Telestroke

• Avoid time/travel delays

• Improve stroke team response times

• Identifying specific patients in need of intervention or surgery

• Avoiding unnecessary transfers
Uses of Telestroke

• Support designation/certification
• Teaching/Continuing education
• Support multiple facilities
• Improved interactions with comprehensive stroke centers
• Enhance recruitment into acute stroke clinical trials
Telestroke

• Earlier Access to Care
• Identification of Stroke Mimics
• Reduced transfers
• Increased tPA treatment
• Cost effective
May 2009:
American Stroke Association

Recommendations for the Implementation of Telemedicine within Stroke Systems of care
ASA - Recommendation 1

• “Whenever local or on-site acute stroke expertise or resources are insufficient to provide around-the-clock coverage for a healthcare facility, telestroke systems should be deployed to supplement resources at participating sites.”
Recommendation 2

• “Organizations providing or requesting telestroke services should operate under rules and principles governed by contractual agreements between the parties.”
ASA - Recommendation 3

“Medical advice should be provided during telestroke consultation in a manner similar to that which occurs during on-site consultation, and documentation of the recommendations should be made available to the originating site within a reasonable time after completion of the consultation.”
Telestroke networks should be deployed wherever a lack of readily available stroke expertise prevents patients in a given community from accessing a primary stroke center within a reasonable distance or travel time to permit access to specially trained stroke care providers.”
Telestroke System Failure

- Technical Factors
- Location of Telestroke equipment
- Strokes may occur at any location in hospital
- Hospital wireless network coverage (cath lab)
- (cardiologists insist on cell coverage in their lab)
Telestroke with Tablets
Tablets in Telestroke - Disadvantages

- Requires Camera Operator
- who holds the camera?
- No zoom
- Image quality may not be comparable
For meetings
chromebox, plus everything you need for video meetings. Starting at $999.
includes first year’s $250 management & support fee