REACH for Better Stroke Outcomes and Revenue
St. Joseph’s/Candler’s Strategy for Growth via Telestroke

Live Webinar
March 18, 2010
REACH for Better Stroke Outcomes and Revenue – St. Joseph's/Candler’s Strategy for Growth via Telestroke

REACH Call Webinar
March 18, 2010
Speakers

REACH Call
- Bill Hamilton, COO, VP of Network Development

St. Joseph's / Candler Health System
- Julie Long, Regional Stroke Coordinator
- John Salandi, Director, Strategic Planning and Business Development
Key Learning Objectives

• The clinical case for telestroke
• The business case for telestroke
• Getting administration buy-in for a telestroke program
• How to execute a telestroke program
• What were the success metrics for the SJC telestroke program?
• What were the results?
• How did the REACH solution impact the telemedicine program?
• Program benefits
Bill Hamilton
CMPE, MBA/MHA
COO, VP – Network Development, REACH Call
Assistant Professor, Department of Neurology, Medical College of Georgia

Bill Hamilton serves as an Assistant Professor in the Department of Neurology with the Medical College of Georgia (MCG) as well as the COO and VP of Network Development for REACH Call. He brings with him seven years of experience as the Administrative Director at the Medical College of Georgia’s Neuroscience Center. There, he directed the clinical and research programs of the Neuroscience Center, and the departments of Neurology and Neurosurgery. Hamilton received his B.A. in History and Economics from Emory University in 1987. He then received his Masters in Business Administration and Masters in Healthcare Administration from Georgia State University in 1991.
The Stroke Landscape

Impact of Strokes in U.S.

- Stroke is the third leading cause of death in the U.S. and the leading cause of adult disability
- Every 40 seconds, someone has a stroke!
- Estimated 795,000 stroke cases per year; 87% of them are ischemic stroke cases
- Total U.S. costs associated with ischemic stroke care are estimated to exceed $2 trillion between 2005 and 2050

Poor Quality of Stroke Care

- The primary reason for poor stroke care in the US is insufficient neurology coverage in emergency rooms
- tPA is the only FDA-approved treatment for ischemic strokes
- Must be administered within three hours from onset of symptoms
- Only 2 - 4% of U.S. stroke patients get tPA
- tPA treatment is almost non-existent in rural hospitals

Source:
* AHA computation based on latest available data
** http://circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.108.191261
It’s always about the patient
“Time Is Brain”

- Reperfusion of the ischemic penumbra with tPA may reduce the extent of damage and improve recovery of function
- Timing is critical
  - The average patient loses 32,000 brain cells/second
  - FAST RESPONSE is CRITICAL


Proprietary and Confidential
Many US Hospitals NOT treating stroke patients with IV tPA

- MEDPAR database revealed that 64% of US hospitals did not treat a single Medicare patient with tPA over a 2 year period (Kleindorfer D, Stroke, 2009)
The Limited Resource: the Willing Neurologist

- 40% of Emergency physicians reluctant to use tPA (want a Neurologist)

- In 2006-7 only 32 Fellows in approved Vascular Neurology Fellowships in U.S.

- By comparison, during same period, 2300 Fellows in Cardiology Fellowships in U.S.

- Many Neurologists abandoning Emergency Department call
Prospective Randomized Trial of Telemedicine vs Telephone
(Meyer BC et al, Lancet Neurol 2008)

Acute Stroke Patients
(4 Community Hospital Emergency Rooms)

Telemedicine
28% (31/111) tPA
Correct Treatment Decision: 98%*

Telephone
23% (25/111) tPA
Correct Treatment Decision: 82%

*No difference in 90 day functional outcome
Supporting Literature for Telestroke

  - The **NIHSS-telestroke examination**, when administered by a stroke specialist using HQ-VTC, is recommended when an NIHSS-bedside assessment by a stroke specialist is not immediately available for patients in the acute stroke setting, and this assessment is comparable to an NIHSS-bedside assessment (*Class I, Level of Evidence A*).
  - It is recommended that a stroke specialist using HQ-VTC **provide a medical opinion in favor of or against the use of intravenous tPA** in patients with suspected acute ischemic stroke when on-site stroke expertise is not immediately available (*Class I, Level of Evidence B*).
Supporting Literature for Telestroke

- Stroke, Jan 2010; 41: e18 - e24.
  - Remote supervision of IV-tPA for acute ischemic stroke by telemedicine or telephone before transfer to a regional stroke center is **feasible and safe**
  - ......Outside Hospital via Telestroke Versus Telephone Consultation Before Transfer to the Regional......Telemedicine in acute stroke

  - Remote video-examination compared to simple telephone consultation

  - Telestroke: Extending stroke expertise into underserved areas.
Lessons Learned and Conclusions

- Telestroke can “flatten” stroke care and bring a stroke specialist to ANY rural, community hospital.

- Web-based telestroke systems are “fast” with potentially very short onset to treatment times.

- Academic and Regional Medical Centers should become Hubs and support community hospitals as Spokes.
How REACH works:
Hub & Spoke Model

Hub
Comprehensive Stroke Center

Spoke
Rural Hospital

Physician
Location: Anywhere

REACH Call™
How REACH works:
Hub & Spoke Model

Hub
Comprehensive Stroke Center
- No equipment necessary

Spoke
Rural Hospital
- Cart*
- CT scanner
- Internet access

Physician
Location: Anywhere
- Laptop/PC
- Standard Web cam
- Internet access
What is REACH?

REACH is a convenient, web-based portal for Telemedicine Services, enabling access to the highest standards of care from anywhere in the world.

The REACH solution includes:

- A user-friendly interface with integrated decision support tools and SOAP workflow, designed for and by physicians
- Automatic data collection for seamless support of
  - EMR / HL7 integration
  - Billing (up to Level 5)
  - On-demand reports
  - Quality metrics & Audits
  - Research
  - National registry integration
- Advanced, standards-based video-conferencing
- Experienced consultants to help build and grow telemedicine networks
- Call coverage support through industry partners
John Slandi
MBA/MHA
Director, Strategic Planning and Business Development, St. Joseph’s / Candler Health System

John Slandi is the Director of Strategic Planning and Business Development at St. Joseph’s/Candler Health System in Savannah, Georgia. Prior to this role, John was the Service Line Director for Neurosciences at St. Joseph’s/Candler. It was in this service line role that he worked closely with the clinical leadership of the Stroke Program to develop and implement the Regional Stroke Network. John has over ten years of hospital administration experience in a variety of business development and operational positions. John received an MHA/MBA degree from Georgia State University in 2000 and a BS in Finance from Florida State University in 1995.
St. Joseph’s / Candler Health System
Savannah, Georgia
St. Joseph’s/Candler Health System Statistics and Market Overview

- 636 Licensed Beds
- ED Visits: 83,792
- Physicians
  - 10 Neurologists
  - 10 Neurosurgeons

Two hospital systems in Savannah
- SJC and Memorial Health
- Memorial Health is an AMC with Level I trauma
- SJC is a two-hospital system
- St. Joseph’s Hospital is regional hub for Neuro and Cardio

Catchment Area
- Large regional rural catchment area for acute care providers in Savannah.
- Extends 75 miles to the North, West and South.
- Approximately 750,000 people in market area.
Are you ready to become a Teleneurology / Telestroke Hub?

- Primary Stroke Center Certified
- Neurology Consultant Availability 24/7
- Neurosurgical Back-up 24/7
- Neurological ICU
- Neuro-interventional and Neuro-intensivist options
- Specialty trained multi-disciplinary teams of care givers in all phases of treatment and recovery
- Maintain high quality outcomes and top performer status in CMS stroke care measures.
- Participate in regional telemedicine outreach
- Strong partnership with local and regional EMS providers
St. Joseph’s/Candler Regional Stroke NETwork

- First hospital live with telemedicine May 1, 2009.
- Completed installation at six spoke hospitals and two hubs November 1, 2009.
- Initial spoke hospitals were selected based on ED volume and geographic location to provide optimal regional coverage.
- 100% of program costs are covered by St. Joseph’s/Candler.
- Each spoke hospital is considered “Stroke Ready”.

Proprietary and Confidential
Business Case for a Telestroke NETwork

- ED Consult Volume – Transfer Projections
- Return on Investment (ROI)
  - Contribution Margin on incremental regional transfers to SJH.
  - Incremental contribution margin on improved tPA utilization
- Physician Engagement
  - Identify a Physician champion
  - Work closely with physician group to implement network
- 3-year trend of declining stroke volume
## Business Case for a Telestroke NETwork

<table>
<thead>
<tr>
<th>Volumes:</th>
<th>FY2009</th>
<th>FY2010</th>
<th>FY2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spoke ED visits</td>
<td>21,250</td>
<td>61,250</td>
<td>80,000</td>
</tr>
<tr>
<td>Consults per 1,000 ED visits</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Consult Volume</td>
<td>64</td>
<td>184</td>
<td>240</td>
</tr>
<tr>
<td>Transfer Volume (50 percent of Consult Volume)</td>
<td>32</td>
<td>92</td>
<td>120</td>
</tr>
<tr>
<td>Contribution Margin per Transfer</td>
<td>$3,000</td>
<td>$3,045</td>
<td>$3,091</td>
</tr>
</tbody>
</table>

### Program Revenue:

<table>
<thead>
<tr>
<th></th>
<th>FY2009</th>
<th>FY2010</th>
<th>FY2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Contribution Margin on Transfers</td>
<td>$95,625</td>
<td>$279,759</td>
<td>$370,881</td>
</tr>
<tr>
<td>Service Fee Revenue Offset from Spoke Hospitals</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Total Program Revenue</td>
<td>$95,625</td>
<td>$279,759</td>
<td>$370,881</td>
</tr>
</tbody>
</table>

### Program Expenses:

<table>
<thead>
<tr>
<th></th>
<th>FY2009</th>
<th>FY2010</th>
<th>FY2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Service Fees - Regional Spokes</td>
<td>$45,000</td>
<td>$90,000</td>
<td>$90,000</td>
</tr>
<tr>
<td>Monthly Service Fees - SJC</td>
<td>$54,000</td>
<td>$72,000</td>
<td>$72,000</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>$99,000</td>
<td>$162,000</td>
<td>$162,000</td>
</tr>
<tr>
<td>Contribution margin</td>
<td>($3,375)</td>
<td>$117,759</td>
<td>$208,881</td>
</tr>
<tr>
<td>Depreciation</td>
<td>$28,000</td>
<td>$28,000</td>
<td>$28,000</td>
</tr>
<tr>
<td>Net Income</td>
<td>($31,375)</td>
<td>$89,759</td>
<td>$180,881</td>
</tr>
</tbody>
</table>

### Capital:

<table>
<thead>
<tr>
<th>Capital:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Equipment &amp; Installation (5 sites)</td>
<td>($140,000)</td>
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</tbody>
</table>

### Program Cash Flow

<table>
<thead>
<tr>
<th>Program Cash Flow</th>
<th>FY2009</th>
<th>FY2010</th>
<th>FY2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>($140,000)</td>
<td>($3,375)</td>
<td>$117,759</td>
</tr>
</tbody>
</table>

### Financial Ratios

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DISCOUNT RATE</td>
<td>6.0%</td>
</tr>
<tr>
<td>NET PRESENT VALUE</td>
<td>129,247</td>
</tr>
<tr>
<td>ROI</td>
<td>37.6%</td>
</tr>
</tbody>
</table>
Stroke Volumes - Fiscal YTD 2010
Increased 19% in 8 months, 131 new Cases Projected
Incremental CM ~$390,000, excluding tPA DRG’s

<table>
<thead>
<tr>
<th></th>
<th>FY2007</th>
<th>FY2008</th>
<th>FY2009</th>
<th>FYTD2010*</th>
<th>FYTD2010**</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Joseph's Hospital</td>
<td>479</td>
<td>498</td>
<td>439</td>
<td>573</td>
<td>382</td>
</tr>
<tr>
<td>Candler Hospital</td>
<td>300</td>
<td>224</td>
<td>252</td>
<td>249</td>
<td>166</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>779</td>
<td>722</td>
<td>691</td>
<td>822</td>
<td>548</td>
</tr>
</tbody>
</table>

*Annualized FYTD2010 Jul to Feb
**Actual FYTD2010 Jul to Feb
Julie Long is the Regional Stroke Program Coordinator for St. Joseph's/Candler (SJ/C) Health System in Savannah, Georgia and has been responsible for the implementation of SJ/C’s Stroke Telemedicine Program. She has 15 years of healthcare experience including the oversight and management of a Comprehensive Stroke Program, Neuroscience, Critical Care, Med-Surg and Emergency Department Nursing. Formerly, she served as the Clinical Director for the Orthopedic and Neuroscience Service Line providing leadership for the development and Implementation of Clinical Programs and Clinical Operations. She received her B.S. Degree in Nursing from Armstrong Atlantic University in 1996 and received a National Board Certification in Nursing Administration in 2006.
Launching the Telestroke NETwork

- Supporting Literature
- Clinical Leadership Adoption
- Hub and Spoke readiness
Clinical Leadership Adoption

Getting buy-in and showing progress to CNO, CMO …

- Proving improvement in outcomes
  - Literature references
  - Reference other networks
- Becoming a regional leader in Stroke Care
- Improving tPA utilization
- Focusing on QA/Time targets
  - Utilization of Reports and Data from REACH Call
  - Functionality of data use
- Emphasizing competency and training
Stroke Readiness for Spoke Hospitals

- Readiness Assessment with recommendations and project plan for improvements
- Order Sets, Policies, Protocols and Guidelines
  - Implementation of Protocols and Order Sets
- Integration of Technology into Clinical Protocol
- Education
  - ASLS Course for ED and EMS
  - Webinars
  - Mock Stroke/Dry Runs with REACH Call, Inc.
  - Competency and training: Technical and Clinical
REACH Call
Telemedicine Cart
Program Performance and Next Steps

- REACH Data and tPA utilization
- QA Process/ Available Data Options, REACH
- Next Steps
St. Joseph’s / Candler
Total # of REACH Registered Consults (2009)

n=91

- St. Joseph’s
- Candler
- Effingham
- Appling
- Meadows
- Wayne
- Coffee
- Liberty

2009
GA - REACH Consults
Consultant logged in (Trend-2009)
Spoke tPA Approval

2009

- n = 10 tPA

- 1 SJH
- 1 Candler
- 3 Effingham
- 1 Appling
- 1 Meadows
- 3 Wayne
- 1 Coffee
- 1 Liberty

2010

- 8 tPA in 2010 to date
- Projected for >200% growth in utilization over 2009
# tPA Time Targets (2009)

<table>
<thead>
<tr>
<th>Step</th>
<th>ER Arrival → REACH Registration</th>
<th>ER Arrival → Consultant Login</th>
<th>ER Arrival → NIHSS</th>
<th>ER Arrival → tPA Decision</th>
<th>ER Arrival → tPA Given</th>
<th>Onset → tPA Given</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended</strong></td>
<td>15 min</td>
<td>25 min</td>
<td>35 min</td>
<td>45 min</td>
<td>60 min</td>
<td>180/270 min</td>
</tr>
<tr>
<td>tPA Approval 1</td>
<td>45 m</td>
<td>54 m</td>
<td>73 m</td>
<td>96 m</td>
<td>120 m</td>
<td>150 m</td>
</tr>
<tr>
<td>tPA Approval 2</td>
<td>6 m</td>
<td>23 m</td>
<td>40 m</td>
<td>50 m</td>
<td>69 m</td>
<td>109 m</td>
</tr>
<tr>
<td>Consult 3</td>
<td>12 m</td>
<td>33 m</td>
<td>54 m</td>
<td>68 m</td>
<td>98 m</td>
<td>128 m</td>
</tr>
<tr>
<td>Consult 4</td>
<td>37 m</td>
<td>74 m</td>
<td>98 m</td>
<td>99 m</td>
<td>117 m</td>
<td>267 m</td>
</tr>
<tr>
<td>Consult 5</td>
<td>68 m</td>
<td>96 m</td>
<td>115 m</td>
<td>129 m</td>
<td>201 m</td>
<td>221 m</td>
</tr>
<tr>
<td>Consult 6</td>
<td>41 m</td>
<td>66 m</td>
<td>82 m</td>
<td>86 m</td>
<td>ND*</td>
<td>ND*</td>
</tr>
<tr>
<td>Consult 7</td>
<td>15 m</td>
<td>36 m</td>
<td>46 m</td>
<td>59 m</td>
<td>69 m</td>
<td>89 m</td>
</tr>
<tr>
<td>Consult 8</td>
<td>37 m</td>
<td>40 m</td>
<td>53 m</td>
<td>55 m</td>
<td>81 m</td>
<td>131 m</td>
</tr>
<tr>
<td>tPA Approval 9</td>
<td>6 m</td>
<td>42 m</td>
<td>87 m</td>
<td>87 m</td>
<td>88 m</td>
<td>118 m</td>
</tr>
<tr>
<td>tPA Approval 10</td>
<td>9 m</td>
<td>43 m</td>
<td>57 m</td>
<td>87 m</td>
<td>105 m</td>
<td>175 m</td>
</tr>
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</table>

Based on NINDS Time Targets:
- *Door to treatment = 60 minutes*
- *Onset to treatment= 180 min (3-hr window)/ 270min (ECASS III 4.5 hr window)*

*ND=not documented*
Next steps: Spoke Hospitals

- Ongoing network and clinical support
- Quarterly performance improvement process to include QA, Volumes, ALOS, Outcomes. Reports designed by REACH Call, Inc.
- Review all cases for Process and Performance Improvement
- Monthly Meetings to Present Data to spokes to include PI, Time targets for tPA, potential volumes and identify process improvement opportunities
Next steps: Hub NETwork development

- Upgrade to REACH 3.0
- Stroke NETwork Conference May 1st, 2010
- Voice speaker and new Global Media camera update
- Transmission of CT Perfusion/Intervention Program
- Provide training opportunities for Neurosurgeons Hemorrhagic Stroke

- Ongoing Regional Stroke Education
  - Quarterly CME
  - Monthly ASLS Course
  - Monthly Webinars
  - Weekly Mock Stroke
  - Monthly Competencies

- Weekly Functionality testing
Case Presentation: At a spoke

- A 39 year old female presented to the Emergency department at Meadows Regional Medical Center with difficulty speaking and right sided weakness.
- NIHSS 6
- Consultant approved tPA treatment and Pt was transferred to the NICU HUB.
- Risk factors included ICA stenosis and an LDL of 139.
- Started on Antiplatelet and Statin.
- Discharged home the next day without any Neurological deficits.
Case Presentation: At a “spoke within a hub”

- A 64 year old presented with left sided weakness and dizziness to St. Joseph’s “spoke within a hub”
- NIHSS 7
- Consultant logged in and approved tPA.
- Patient admitted to rehab day 4 for a two week inpatient rehab stay.
- Discharged with minimal to no deficits. Went back to work as a nurse 2 weeks after Discharge.
Expected Benefits

- Better patient outcomes
- Increased revenue
- Physician adoption
- Decreased LOS variability
- Increase in admissions
Unexpected Benefits

- Over-triage (good) with REACH system to assess other neurological conditions
- Stronger referral pattern for non-stroke consults
- Reduced unnecessary transfers (patients could receive local care)
- High utilization by physicians for consults at hub
- Increase in tPA utilization at the hub
Comments/Questions?

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