Stroke Coordinator: ROI

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Disclosure

Kathy has no actual or potential conflict of interest in relation to this presentation.
Stroke Boot Camp

Train and Think F.A.S.T. – Time Saved Is Brain Saved

563 bed University Hospital & Children’s Hospital

Magnet Designation since 2007

Joint Commission Comprehensive Stroke Center 2013
Objectives

1. Discuss impact of reduced complication rates and length and of stay on ROI

2. Understand the value of increasing Activase treatment rates

3. Rationalize the direct cost incurred for the role of a full time stroke coordinator.
• Cost increase predictions from 2012-2030
  • Total direct annual stroke related medical costs expected to increase from $71.55 billion to $183.13 billion
  • Real indirect annual costs projected to rise from $33.65 billion to $56.54 billion
  • Overall annual costs of stroke projected to increase to $240.67 billion by 2030 (129% increase)
• Aging population =
  • Increase in prevalence of stroke
  • Additional 3.4 million people with stroke in 2030
  • By 2030 nearly 4% of the US population is projected to have had a stroke

• In 2015, stroke has dropped to 5^{th} leading cause of death

*Stroke* 2013; 44: 2361-2375
• Retrospective review of a national inpatient sample in the US from 2001-2008:
  • Median hospital costs in 2008 dollars were $14,102
  • Average 2008 Medicare payments were $10,098 for intravenous thrombolysis without complication and $13,835 for intravenous thrombolysis with major complication
  • Loss of ~$4000 for each patient with a good outcome
  • Loss of ~$4000 for each patient with disability or mortality

Stroke 2012; 43: 1131-1133
• The DRG system is in place to incentivize hospital efficiency
• Strategies for decreasing cost revolve largely around the formation of stroke units
• Savings of ~$55 million per 1000 patients

*Stroke* 2012; 43: 1131-1133
Association Between Stroke Center Hospitalization for Acute Ischemic Stroke and Mortality

- Observational study – n=30,947
  - 49.4% to designated stroke centers
- Data from: NY statewide planning & research cooperative system from 2005-2006
- Mortality follow up for 1 year
- Included GI hemorrhage & AMI to determine if findings were specific to stroke
- Main outcome measure: 30-day all cause mortality

*JAMA* 2011; 305 (4): 373-380
Association Between Stroke Center Hospitalization for Acute Ischemic Stroke and Mortality

• Admission to designated stroke centers associated with lower 30 day all cause mortality
  • 12.5% vs 10.1% (p<.001)
  • 2.5% absolute reduction in all cause mortality – sustained out to 1 year

• Increased use of thrombolytic therapy in stroke centers
  • 1.7% vs 4.8% (p<.001)

• Outcome differences specific for stroke
  • Similar all cause mortality for GI bleed and AMI

JAMA 2011; 305 (4): 373-380
• Retrospective analysis
• Total costs/payments for treating AIS patients during program evolution
• 2005, 2007, 2010
• N=1570
• Analyses stratified by:
  • Demographic characteristics, outcomes, treatments, time and comorbidities

*Stroke. 2013;(44): 2254-2259*
• Changes to SNLI program over study time:
  • Increase in transfers from enlarging network of referring hospitals
  • Increased use of IV rtPA from 13.6% in 2005 to 28.5% in 2010
  • Growth of regional network to >70 hospitals

*Stroke. 2013;(44): 2254-2259*
Program elements to grow referral network and improve efficiency of care on arrival to SNLI:

- Focused stroke education to referring ED staff and EMS
- Streamlined transfer process: 1 phone #, standardized faxed order sets & transport protocols
- 24/7 coverage by neuro-critical care nurse (2008) as 1st responder for SNLI ED cases
- Expansion of guideline based standardized order sets & care paths

Stroke. 2013;(44): 2254-2259
• Results
  • Total costs remained consistent over time
  • Slightly lower than previously published estimates
  • Demonstrates that providing comprehensive stroke care with improved access and treatment may be financially feasible for other hospitals

*Stroke. 2013;(44): 2254-2259*
Additional notable discussion points:

- SNLI total costs may be lower than national estimates published in the Brinjikji study
  - 4%-23% across stratified patient populations
  - No difference in total costs over time after accounting for inflation between 2005 & 2007, or 2005 & 2010
  - Ongoing efforts to improve quality metrics likely contributed to greater efficiencies, shorter lengths of stay, and reduced costs

Implication

- Increase in costs for personnel and technology likely offset by improved efficiencies in process

*Stroke. 2013;(44): 2254-2259*
Revised & Updated Recommendations for the Establishment of PSCs
A Summary Statement From the Brain Attack Coalition

• Less disability associated with use of rt-PA
• Use of rt-PA increased in PSCs
• Less disability = less lifetime cost
• Stroke units (Class I, Level A)
  • 17-28% reduction in death
  • 7% increase in being able to live at home
  • 8% reduction in length of stay
  • 19% increase in good outcomes

*Stroke. 2011;(42): 2651-2665*
Stroke Coordinator: *Lynchpin of the stroke team*

“Many hospital stroke programs fail, and the primary reason is they lack a strong stroke coordinator. Almost universally, programs that fail or backslide in performance are those [that] lost a stroke coordinator or did not have one and tried to tack it on to someone else’s job. Having seen a few hundred stroke programs, I can unequivocally make this statement.“

-- Timothy Shephard, PhD

*Rodak 2013: Becker Hospital Review*
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Train and Think F.A.S.T. –
Time Saved Is Brain Saved
Stroke Coordinator Role

- Collaborate with quality department for data abstraction/entry
  - Core Measures reporting has necessitated change
- Community Outreach – organize school programs, lectures for community groups
- Educational programs for EMS
- Round on patients in-house
- Provide education to nurses, providers, patient care assistants, therapists, radiology staff, volunteers, etc
- Develop competency demonstration for staff
Stroke Coordinator Role

- Review of myriad new guidelines
- Vigilance over clinical practice guidelines, protocols, policies to ensure following latest guidelines
- Data analysis and reporting to internal & external groups
  - Different rules = different data (Good luck keeping that straight)
  - Report cards, PI plans
- Organization of certification visit details
- Professional organization membership
  - Support & resource sharing, & support, support, support - AANN
- Professional certifications – CNRN, SCRN
Opportunities with the Role

A successful coordinator develops:

• Master communicator/negotiator skills
• Data analysis terminology – median, mode, statistical significance, etc
• Expertise in use of Windows Office products – ppt, excel
• Team builder skills
• Multi-lingual ability - Regulatory language as your second language
• Multi-tasking ability – most nurses are already naturals at this, but ability is perfected in this role
• Network of friends/acquaintances in all departments
• Publication of data/processes
• Presentation at regional, national conferences
Strong Leaders Benefit Patients & Hospital

- Hospitals becoming financially accountable for meeting quality measures related to stroke care
- In order to ensure hospitals meet these goals they need to have strong stroke program leaders:
  - Stroke Coordinator
  - Physician Champion

Rodak 2013: Becker Hospital Review
Create a Financial Case for a Stroke Coordinator

Calculate direct costs – salary & benefits

<table>
<thead>
<tr>
<th>Type</th>
<th>Status</th>
<th>Hourly Rate</th>
<th>Annual Salary</th>
<th>Benefits (25%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN/BSN</td>
<td>FT</td>
<td>$31.00</td>
<td>$64,480</td>
<td>$16,120</td>
<td>$80,000</td>
</tr>
<tr>
<td>APRN</td>
<td>FT</td>
<td>$43.64</td>
<td>$90,771</td>
<td>$22,693</td>
<td>$113,464</td>
</tr>
<tr>
<td>Assistant</td>
<td>FT</td>
<td>$17.00</td>
<td>$35,360</td>
<td>$8,840</td>
<td>$44,200</td>
</tr>
</tbody>
</table>

Calculate payer mix, reimbursement and cost-per-inpatient-day

**Payer Mix**
- 65% Medicare -- 4% Self Pay
- 5% Medicaid -- 2% Other
- 25% Managed Care/Commercial

**Stroke/TIA**
- N = 300   MS-DRG: 61-72
  - Contribution Margin $3,092/case  ($927,600)
  - Direct cost $1,102/day
  - Baseline ALOS 5.5 days (1,650 days)

**Neurovascular Surgical/Endovascular**
- N = 40   MS-DRG: 21-27
  - Contribution Margin $12,729/case  ($509,160)
  - Direct cost $2,000/day
  - Baseline ALOS 10 days (400 days)

Projected decrease in LOS = 8%
- Decrease of 132 days, or $145,464 saved
- Decrease of 32 days, or $64,000 saved

Don’t forget the financial impact of improved outcomes

- Calculate complication rates (pneumonia 3%)
- Calculate cost/case of complication rates
  - Pneumonia, DVT, PE (Increase of $33,155)
- Effective dysphagia screening at bedside can reduce aspiration pneumonia by 50% (Hinchey, et al. *Stroke* 2005;36)

3% of 340 = 10.2 patients with pneumonia ($338,181)
50% reduction = $169,090 in “cost avoidance”
Become familiar with these terms

- # stroke discharges by type
- Case mix index
- Average severity
- Net revenue
- Fixed costs
- Variable costs
- Direct margin
- Net margin
Don’t just track data, TREND your data:

- Identify opportunities for improvement
  - Within quality measures
- Demonstrate program cost effectiveness
  - Trend length of stay before program initiation
  - Trend readmission rates
  - Trend complication rates
    - sICH
    - Aspiration pneumonia
    - VTE
- Trend and compare discharge destination
  - Should see larger numbers of patients go home or to acute rehab
Quality Measures

• January 1, 2013 – required to report the stroke 8 to avoid 2% penalty
• Publicly reported data
• January 1, 2014 – required to report 2 additional measures
• These results will affect reimbursement in FY2016 (Oct 1, 2015-Sept 30, 2016)
What does success look like?

Volume of In-Patient Strokes

Don’t forget...
- Mode of Arrival (EMS vs Pvt Vehicle)
- Arrival within time window for treatment
- Inter-facility Transfers
- Denials – Potential leakage to the competition
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Stroke Patient Mode of Arrival

<table>
<thead>
<tr>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulance</td>
<td>EMS</td>
</tr>
<tr>
<td>Automobile</td>
<td>Pvt car</td>
</tr>
</tbody>
</table>

- Total ambulance arrivals:
  - 2009: 1,200
  - 2010: 1,500
  - 2011: 1,800
  - 2012: 2,100
  - 2013: 2,400

- Total automobile arrivals:
  - 2009: 1,000
  - 2010: 1,300
  - 2011: 1,600
  - 2012: 1,900
  - 2013: 2,200

EMS: 61%
Pvt car: 39%
What does Success Look Like?

- EMS volume increases
- EMS is a participant on stroke committee
- EMS stroke protocols are reviewed annually
- EMS stroke protocols follow current CPGs
- EMS run sheets are provided on every patient
- Care provided by EMS is assessed to ensure protocol adherence
- EMS Feedback is provided by stroke center
- EMS attends stroke survey
LKW to ED arrival

- 2006
- 2014

43% 35% 8% 2% 49% 63%

3 hour 4.5 hour

2006 2014

LKW to ED arrival

% of total cases by time range:
- 0-30 min: 2006: 35%, 2014: 43%
- 31-60 min: 2006: 8%, 2014: 2%
- 61-90 min: 2006: 49%, 2014: 63%
- 91-120 min: 2006: 43%, 2014: 49%
- 121-150 min: 2006: 2%, 2014: 8%
- 151-180 min: 2006: 49%, 2014: 63%
- 181-210 min: 2006: 35%, 2014: 43%
- 211-240 min: 2006: 8%, 2014: 2%
- 241-270 min: 2006: 49%, 2014: 63%
- 271-300 min: 2006: 35%, 2014: 43%
- 301-330 min: 2006: 8%, 2014: 2%
- 331-360 min: 2006: 49%, 2014: 63%
- 361-540 min: 2006: 35%, 2014: 43%
- > 540 min: 2006: 2%, 2014: 8%
- UNK: 2006: 2%, 2014: 8%

Time ranges in minutes:
- 0-30 min
- 31-60 min
- 61-90 min
- 91-120 min
- 121-150 min
- 151-180 min
- 181-210 min
- 211-240 min
- 241-270 min
- 271-300 min
- 301-330 min
- 331-360 min
- 361-540 min
- > 540 min
- UNK
Are Your ED Physicians Finding a Reason to TREAT or NOT TO TREAT?

What does Success Look Like?
• No missed opportunities
• ED Physicians discuss their concerns r/t Activase
• ED Physicians prescribe Activase without Neurologist
• Individual ED Physician Report Cards
• Increase number of patients receiving IV Activase

Created by Genesis Lewis RN, BSN
Dallas, Texas
How Do You Measure Stroke Outcomes?

- Patient Disposition – increase of patient discharged to home and/or rehab
- Compare Initial and Discharge NIHSS – decrease in NIHSS or return to baseline at discharge
- mRS at 90 days – able to perform activities of daily living
- No Stroke readmissions within 30 days
Resources you can’t live without!!

- American Association of Neuroscience Nurses
  - Special focus group list-serve: Stroke
- American Heart/American Stroke Association
  - [www.heart.org](http://www.heart.org)
  - Your AHA Staff Consultant
- Your fellow stroke coordinators
  - Network, network, network!!
  - Political boundaries are invisible for us!
Evolution...

New Stroke Coordinator

Seasoned Stroke Coordinator