Nursing Care for Acute Ischemic Stroke Patients

Highlights of lessons learned 2016

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Learning Objectives:

By attending this course, the participant will provide better patient care through an increased understanding of:

- Managing the chaos – identifying priorities and establishing role expectations during Code Stroke/BART
- Administering alteplase safely – understanding elements of the medication safety pause, accurate administration and documentation of bolus/infusion/NS flush
- Monitoring of the alteplase patient – understanding requirements and expectations for monitoring frequency and documentation, early identifications of complications, the importance of blood pressure management
- Transferring safely – identifying essential information to aid in safe patient handoffs, establishing expectations for transferring patients for Code IR
History:

2014 – Efforts to “go lean” & improve DTN

- Pre-notification:
  - FAST
  - LKW
  - Witness name/cell number
- Straight to CT
- Early weight
- Early pharmacy ‘mix’ call

- Clear goals:
  - Door to ED MD quick assessment < 10 min
  - Door to neurology (in-person or telestroke) = 15-20 min
  - Door to CT read < 20 min
  - Pharmacy mix to deliver time < 10 min
  - Lab TAT < 25 min
  - Door to alteplase < 45 min
Impact:

Door to Alteplase

Median Time (minutes)

2013  2014  2015  2016  2017

Year

51  44.25  44  41  34
Managing the chaos

Code Stroke / Code BART

• Process changes based upon updated clinical practice guidelines (CPGs)

• Nursing specific responsibilities affected:
  ➢ Do not delay CT – EMS straight to CT, single attempt IV/lab draw, POC
  ➢ Do not delay alteplase – may proceed prior to lab results unless suspicion of abnormal platelet count or coag studies

• Communication challenges – establishing role expectations
  ➢ Learnings from other code processes
  ➢ Don’t make assumptions
Case Comparison:

Patient: 69 yo male
- EMS: LKW 1430, witnessed, left weakness, difficulty communicating
- 1557-1558 Arrival/safety pause: ID band, FAST +, MD quick assess, orders entered, blood sugar 144, proceed with Code Stroke to CT
- 1600: CT completed, weight obtained, IV placed, labs drawn
- 1615: decision to give alteplase
- 1622: alteplase bolus (DTN = 25 min)

Patient: 73 yo female
- Walk-in: left sided numbness, LKW 0600
- 0719 Arrival: roomed
- 0744: weight obtained
- 0747: MD assess & orders entered
- 0749: CT completed
- 0822: IV placed
- 0825: decision to give alteplase
- 0840: labs drawn
- 0847: alteplase bolus (DTN = 1 hr 28 min)
Tools Available

First HIT: DRAFT 4/26/17

Patient Label:
Transport agency:
EMS Pre-notification call: Yes / No Time of call:

FAST results: Positive / Negative / Not Done LOR:
LANS score:
Anticoagulants: Yes / No Field B/P:
Witness name & Phone #:

Patient arrival Time:
- Confirm ID and place arm band
- F/Feeds x 1 attempt; lab draw x 1 attempt
- POCT glucose:
- Send labs via STAT lab cart (green)
- Transport to ED time (left department)
- Document EMS, pet anti-arrhythmia
- MD orders

11th Annual Cerebrovascular Symposium
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Tools Available

Alteplase Administration
- Administer bolus over 1 minute, co-sign MAR
- Notify HUC of bolus time OR initiate Alteplase V/S Heedi Check tool (Rapid alert notification panel)
- Immediately following bolus, initiate infusion to run over 1 hour, co-sign MAR (ensure time ≥ 1 min after bolus)
- Monitor for complications: stop alteplase for new neuroimaging, headache, new changes in alertness, systolic blood pressure ≥ 90
- If alteplase restarted, neurologist to place order in Epi
- When infusion complete:
  - Document end of alteplase infusion on MAR (will not be exactly 1 hour after start time)
  - Stop NS Flush bag and set to turn at same rate (parameter there is still drug in the line)
  - Document NS Flush start time on MAR
  - Close patient/family is provided aphasia handout

Upon return to ED room
- Obtain DVT
- Obtain initial and/or 2nd IV start, lab draw as needed
- Set monitor to cycle vital signs every 15 min
- Complete documentation prior to bolus
- Initiate alteplase infusion in Epi
- Neurologist / PA / Triage - document in ED Stroke Care flowchart
- If not a candidate for alteplase, complete screen (screen prior to PO)

Alliance Safety Phase
1. NEXUS MD confirms final 'give alteplase'
   - Dose verification:
     - RNI alteplase independent dose calculation
   - RNI confirms dose with pharmacy upon medication delivery

2. Bedside check:
   - Confirm 5 Rights
   - Prime tubing and set pump (aw volume 20 or less to pump level 1)
   - Assess & document vital signs (patient awake and ready)
   - Document medicated, manage as ordered and notify MD

3. Infuse:
   - Infuse dose
   - Infusion rate
   - Infusion time
   - Infusion check

4. Monitor:
   - Vital signs
   - Neurological status
   - Laboratory results
   - Hemodynamic stability

5. Complete:
   - Document time to infusion
   - Document time to end of infusion
   - Document laboratory results

Alteplase Calculation
- Today’s weight = kg
- Document weight = kg
- Infusion = kg
- Alteplase concentration = mg/kg
- Total Dose = kg
- Infusion rate = mg/kg

Acute Stroke Patient Handoff Guidelines
- Last Know Well: Time
- Symptoms
- Conscious:
- Change:
- POI:
- O2 Set:
- POC:
- PRN:

Disposition
- Code IR:
- STAT critical care transport arranged

Aftercare
- Code IR jacket complemented
- Code IR jacket completed
- Document in patient chart

Notes:

Where complete:
Fax this form to: 206-205-2919
Give original copy to manager:
This is not a part of the permanent medical record.

Institutional and individual responsibility to verify the accuracy of information included in this form. This form is not intended as a substitute for maintaining a complete and legible medical record.
Administering alteplase safely – Medication Safety Pause

1. Neurologist/ED MD: final review inclusion/exclusion, consent, confirm final 'give alteplase', place orderset

2. Primary RN/Pharmacy: dose verification
   • Pharmacy – completes dose calculation, pharmacy checklist, places alteplase orders, delivers medication
   • Primary RN – independent dose calculation
   • Primary RN & Pharmacy – upon medication delivery, validate that they have the same dose calculated

3. Primary RN/Charge RN (or delegate): bedside check
   • Confirm 5 Rights
   • Prime tubing & set pump
   • Assess vitals/neuros
   • 2 RN MAR sign-off – confirms 5 Rights, pump settings, BP within parameters (<180/105)
Calculation Challenge

Primary RN at bedside:
• ED or Neurologist MD indicates patient is likely getting alteplase

Pharmacy Checklist:
• ED or Neurologist MD calls pharmacy to mix at 0955

Alteplase Calculation

Today’s weight = 70.3 kg
(No weight in EMR)

*Check Calculation against MAR/Concentration: 1 mg = 1 ml

Total Dose = 0.9 mg x weight (kg) = 63.3 mg
mg (max dose 90 mg)

Bolus = 10% of total dose = 6.3 mg IV
Push over 1 minute

Infusion Dose = 90% of total dose = 57 mg
mg over 1 hour via IV pump
Administering alteplase safely – Dose Administration

Lessons learned:

- Timing of bolus and infusion on MAR
- Duration of the infusion
- Timing of the NS flush
- Documenting the stop/restart of alteplase in rare cases where drug needs to be paused
Calculation Challenge

Primary RN at bedside:

- ED or Neurologist MD indicates patient is likely getting alteplase
- Weight: 70.3 kg
- Total dose:
  \( 0.9 \text{ mg/kg} = 63.3 \text{ mg} \)
- Bolus:
  \( 10\% = 6.3 \text{ mg} \)  Given over: 1 min
- Infusion:
  \( 90\% = 57 \text{ mg} \)  Given over: 1 hour

- Pharmacy delivery time: 1005
- Bolus time: 1007
- Infusion time: 1008

20 ML in IV tubing when alteplase bag beeps empty

How long did infusion run? 41 min

So if the infusion started at 1005, what time would we be hanging the NS flush? 1049
### Case Comparisons:

**Medication Administration Report for Oppenheim, Ellen as of 1/14/16 through 1/17/16**

<table>
<thead>
<tr>
<th>Medication</th>
<th>01/14/16</th>
<th>Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>alteplase (aka ACTIVASE) 4.9 mL</td>
<td>9.09 14.9 mg</td>
<td>1704</td>
</tr>
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<td>9.09 14.9 mg</td>
<td>1704</td>
</tr>
<tr>
<td>HYDROMORPHINE (PF) (aka LAUDURO)</td>
<td>60 mg 1 mL</td>
<td>1537</td>
</tr>
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<td>60 mg 1 mL</td>
<td>1537</td>
</tr>
<tr>
<td>NS (0.9% NaCl) IV solution 43.9 mL</td>
<td>43.9 mL</td>
<td>1512</td>
</tr>
</tbody>
</table>

**Medication Administration Report for Berwald, Christofer Scott as of 2/6/16 through 2/9/16**

<table>
<thead>
<tr>
<th>Medication</th>
<th>02/06/16</th>
<th>Completed Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>alteplase (aka ACTIVASE) 9 mL</td>
<td>8.9 mg 15.8 mg</td>
<td>1516</td>
</tr>
<tr>
<td>alteplase (aka ACTIVASE) 9 mL</td>
<td>8.9 mg 15.8 mg</td>
<td>1516</td>
</tr>
<tr>
<td>NS (0.9% NaCl) IV solution 43.9 mL</td>
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</tbody>
</table>

**Legend:**

- **Complete:** Indicates the medication was administered as ordered.
- **In Progress:** Indicates the medication was not yet administered.
- **Completed:** Indicates the medication was administered and reported.
- **Discontinued Medication:** Indicates the medication was no longer prescribed.

**Admin Instructions:**

- Dose: 81 mg
- Route: IV
- Start: 02/07/16 15:00
- End: 02/07/16 16:17
- PRN Reason: Fever
- PRN Comment: Give if the temperature is greater than 38.5°C
- Start: 02/07/16 16:00
- End: 02/07/16 16:17
Monitoring of the alteplase patient

Requirements:

• NIH – initial assessment and/or prior to alteplase

• Vitals/neuros:
  • Initial assessment – initial identification of any BP elevations
  • Immediately prior to alteplase – is the BP within parameters
  • Q1 x 2 hours, Q30 x 6 hours, Q1 x 16 hours
    ✓ Ongoing patient management
    ✓ Prevent complications
    ✓ Identify complications
Complications

Preventing complications:

• Blood pressure management
  Alteplase parameters < 180/105

• Blood sugar management
  Parameters = normoglycemia (140-180 mg/dl)

➢ Elevations contribute to increased symptomatic ICH and poor outcomes
Documentation:

- Insert new Epic flowsheet screenshots
Transferring

- Nurse to nurse handoff for alteplase and IR patients is vital for ensuring safest patient care
- Code Worksheet contains the basics for communicating handoff on these patients
- Patients being transferred to CH for Code IR need the Code IR packet
  - Instruction page
  - Code IR Transfer Report Form
  - MRI Safety Screening Form
  - Interfacility Transport Orderset
Questions???

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References:

- Det Norske Veritas (DNV) GL. Healthcare. Primary Stroke Center Certification Program – Requirements PSC 2.0.