UPDATES IN ENDOVASCULAR STROKE THERAPY

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DISCLOSURES

• STRYKER NEUROVASCULAR – CONSULTANT
• BOEHRINGER INGELHEIM – SPEAKER’S BUREAU
IMMEDIATE DECISIONS

• STROKE INTERVENTION BEGINS THE MOMENT SYMPTOMS START
  • FAMILY MEMBER, FRIEND, STRANGER, TRANSFERRING NURSE, TRANSFERRING PHYSICIAN, EMS, ACCEPTING PHYSICIAN/NURSE/RESIDENT

• ~2 MILLION NEURONS DIE PER MINUTE

• MR CLEAN SHOWS A DECREASE IN EFFECT OF EVT ON GOOD OUTCOME OF 6.4% PER HOUR DELAY IN TIME TO REPERFUSION
<table>
<thead>
<tr>
<th>Stroke Trial</th>
<th>mTICI 2b/3</th>
<th>90 day mRS ≤2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>EVT</td>
</tr>
<tr>
<td>IMS 3</td>
<td>23-44%</td>
<td>40.8%</td>
</tr>
<tr>
<td>MR RESCUE</td>
<td>25%</td>
<td>12%</td>
</tr>
<tr>
<td>SYNTHESIS-EXPANSION</td>
<td>Not reported</td>
<td>30.4%</td>
</tr>
<tr>
<td>MR CLEAN</td>
<td>58.7%</td>
<td>32.6%</td>
</tr>
<tr>
<td>SWIFT PRIME</td>
<td>88%</td>
<td>60%</td>
</tr>
<tr>
<td>ESCAPE</td>
<td>72.4%</td>
<td>53%</td>
</tr>
<tr>
<td>EXTEND-IA</td>
<td>86%</td>
<td>71%</td>
</tr>
<tr>
<td>REVASCAT</td>
<td>66%</td>
<td>43.7%</td>
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</tbody>
</table>
2015 AHA/ASA FOCUSED UPDATE OF 2013 GUIDELINES FOR EARLY MANAGEMENT OF PATIENTS WITH AIS REGARDING EVT

- EVT WITH STENT RETRIEVER
- (A) PRE-STROKE MRS ≤1
- (B) AIS RECEIVING IV TPA <4.5 HOURS ACCORDING TO GUIDELINES
- (C) ICA/M1 OCCLUSION
- (D) ≥18 YEARS
- (E) NIHSS ≥6

- (F) ASPECTS ≥6
- (G) TREATMENT INITIATED (GROIN PUNCTURE) ≤6 HOURS

CLASS I, LEVEL OF EVIDENCE A

http://stroke.ahajournals.org/content/early/2015/06/26/STR.0000000000000074
• 1287 PTS (634 EVT)
• TIME AT WHICH ESTIMATED TREATMENT BENEFIT FIRST CROSSED 1.0 WAS AT 7 HOURS AND 18 MINUTES
• ANALYZED EFFECT OF IV TREATMENT, GENERAL ANESTHESIA, OFF-HOURS, AND INTER-HOSPITAL TRANSFER ON TIME TO ADMISSION TO ED OF THE INTERVENTION CENTER (CSC) AND TIME TO TREATMENT
MR CLEAN WORKFLOW CON’TD

- INTER-HOSPITAL TRANSFER PROLONGED TIME TO ED BY 140 MIN (95% CI 129 - 150)
- INTER-HOSPITAL TRANSFER REDUCED TIME FROM ED TO TREATMENT BY 77 MIN (95% CI 64 - 91)
- TIME FROM ED TO TREATMENT WAS INCREASED BY 19 MIN BY GENERAL ANESTHESIA (95% CI 5 - 33)
- TOTAL TIME INCREASED BY 23 MIN DURING OFF-HOURS (95% CI 6 - 40)
AHA/ASA EVT RECOMMENDATIONS

• EVT WITH SR MAY BE REASONABLE FOR CAREFULLY SELECTED PATIENTS WITH GROIN PUNCTURE ≤6 HOURS WITH M2, M3, ACAS, VA, BA, OR PCAS OCCLUSION (CLASS IIB; LEVEL OF EVIDENCE C)

http://stroke.ahajournals.org/content/early/2015/06/26/STR.0000000000000074
• 5 EVT TRIALS
  • 94 PTS (51 EVT)
• MULTICENTER (10) RETROSPECTIVE COHORT
• M2 SEGMENTS, 8 HOURS LKN
• 522 PATIENTS
• 288 EVT (SR, ASPIRATION, TPA), 234 MM
• BASELINE DEMOGRAPHICS
  • MM OLDER, MORE IV TPA, EARLIER PRESENTATION
  • NIHSS AND ASPECTS SAME
• MRS ≤2: 62.8% VS 49%
• SICH (5.6% VS 2.1%, NS)
• 3.1 OR FOR EVT
• TREATMENT EFFECT DID NOT CHANGE PER INSTITUTION

AHA/ASA EVT RECOMMENDATIONS CONT’D

• **WHEN TREATMENT INITIATED >6 HOURS FROM ONSET**, EFFECTIVENESS OF EVT UNCERTAIN FOR ICA/MCA OCCLUSION (CLASS IIB; LEVEL OF EVIDENCE C). ADDITIONAL RTC NEEDED.

• **BENEFITS OF IMAGING BEYOND CT/CTA OR MR/MRA → CTP/MRI-DWI/PWI FOR SELECTING PATIENTS FOR EVT UNKNOWN** (CLASS IIB; LEVEL OF EVIDENCE C). FURTHER RTC NEEDED TO DETERMINE WHETHER ABOVE ARE BENEFICIAL FOR SELECTING PATIENTS FOR EVT >6 HOURS FROM ONSET.
DAWN TRIAL

**Primary Objective**

To evaluate the hypothesis that Trevo thrombectomy plus medical management leads to superior clinical outcomes at 90 days as compared with medical management alone in appropriately selected subjects experiencing an acute ischemic stroke when treatment is initiated within 6-24 hrs after last seen well.

**DWI or CTP Assessment with Clinical Mismatch in the Triage of Wake-Up and Late Presenting Strokes Undergoing Neurointervention**
DAWN TRIAL DESIGN

- PROSPECTIVE, RANDOMIZED (1:1), MULTI-CENTER, PHASE II/III (FEASIBILITY/PIVOTAL), ADAPTIVE, POPULATION ENRICHMENT, BLINDED TRIAL
- UP TO 50 SITES (WORLDWIDE)
- GOAL OF 500 PATIENTS
- PRIMARY ENDPOINT
  - DIFFERENCE BETWEEN AVERAGE WEIGHTED MRS AT 90 DAYS BETWEEN GROUPS
  - 20-30% OF AIS PATIENTS ARRIVE TO ED >8 HOURS FROM SYMPTOM ONSET

IV Lytic
Mechanical Clot Retrieval
Medical Management
RAPID PERFUSION IMAGING

- Rapid processing of perfusion and diffusion
- Quantifies perfusion imaging volumes
- Blood flow reduced by >70%
- Perfusion is delayed > 6 seconds
- CT or MRI
- Email to all stroke team members
Dear DAWN Investigators and Coordinators:

The DAWN DMC met today, February 28, 2017, to review data from the first 200 subjects enrolled in the trial and has voted to stop the trial early for success, effective immediately.
• 61 YEAR OLD MALE WITH ACUTE ONSET RIGHT SIZED HEMIPLEGIA AND APHASIA AT 7:30 AM
• NIH STROKE SCALE SCORE – 20
• CT ANGIOGRAPHY - OCCLUSION OF LEFT ICA AND MCA
Post-stroke day 1 → NIHSS 1
- Discharged to home
THANK YOU.