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**ED Transient Ischemic Attack  
Patient Management:  
What Role for Outpatient  
Evaluation and Disposition?**

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**4<sup>th</sup> EuSEM Congress  
Crete, Greece  
October 5-7, 2006**

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**Disclosures**

- NovoNordisk, King Pharmaceuticals, UCB Pharma Advisory Boards
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- ACEP Clinical Policies Committee
- ACEP Scientific Review Committee
- Executive Board, Foundation for Education and Research in Neurologic Emergencies

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**Session Objectives**

- Discuss the result of the Ross study that suggest that an outpatient evaluation of ED stroke patients can be safely conducted.
- Determine what diagnostic and therapeutic evaluations must take place in order to safely discharge ED TIA patients home for outpatient follow-up.

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## Case Presentation...

- 62 yo male brought in by paramedics
- Paramedics called due to left arm feeling heavy and slurred speech while driving car
- On paramedic arrival, he has a facial droop, slurred speech and a weak left grip
- Symptoms resolve en route to the hospital
- Total duration of symptoms was estimated to be about 30 minutes

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## Case Presentation...

- PMHx of NIDDM
- POC glucose 217
- Not on ASA or any other antiplatelet therapy.
- In the ED, the patient's neurological exam is normal

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## Clinical Questions

- Can an outpatient TIA evaluation in an observation unit be performed that is as useful as the evaluation completed for hospital inpatients admitted with a TIA ?
- What did the Ross study demonstrate?
- What tests need to be performed in the setting of an ED TIA patient who is neurologically intact?
- Why do these tests need to be done?

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## Michael A. Ross MD FACEP

Associate Professor Emergency Medicine  
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William Beaumont Hospital  
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## Management of TIA

- **Areas of Certainty:**
  - Need for ED visit, ECG, labs, Head CT
- **Areas of Less Certainty**
  - The timing of the carotid dopplers
- **Areas of Uncertainty** - Johnston SC. *NEJM* 2002;347:1687-92.
  - "The benefit of hospitalization is unknown. . . Observation units within the ED. . . may provide a more cost-effective option."

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An Emergency Department Diagnostic Protocol For Patients With Transient Ischemic Attack:  
*A Randomized Controlled Trial*

Best Faculty Presentation  
2006 SAEM Meeting  
FERNE/EMF 2004-05 Recipient



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## Objectives

To determine if ED TIA patients managed using an accelerated diagnostic protocol (ADP) in an observation unit (EDOU) will experience:

- shorter length of stays
- lower costs
- comparable clinical outcomes
- ... relative to traditional inpatient admission.



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## Setting



- William Beaumont Hospital: A high-volume university-affiliated suburban teaching hospital
  - Emergency department
    - 2005 ED census = 115,894
  - ED observation unit = 21 beds
    - Emergency physician are the "admitting" physician for all EDOU patients

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## Patient Population

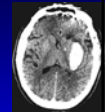
- Presented to the ED with TIA symptoms
- ED evaluation:
  - History and physical
  - ECG, monitor, HCT
  - Appropriate labs
  - Diagnosis of TIA established
    - Decision to admit or observe
    - SCREENING AND RANDOMIZATION**

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## Methods: ADP Exclusion criteria

- Persistent acute neurological deficits
- Crescendo TIAs
- Positive HCT
- Known embolic source (including a. fib)
- Known carotid stenosis (>50%)
- Non-focal symptoms
- Hypertensive encephalopathy / emergency
- Prior stroke with large remaining deficit
- Severe dementia or nursing home patient
- Unlikely to survive beyond study follow up period
- Social issues making ED discharge / follow up unlikely
- History of IV drug use



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## Methods: ADP Interventions

- Four components:
  - Serial neuro exams
    - Unit staff, physician, neurology consult
  - Cardiac monitoring
  - Carotid dopplers
  - 2-D echo
- BOTH** study groups had orders for the same four components

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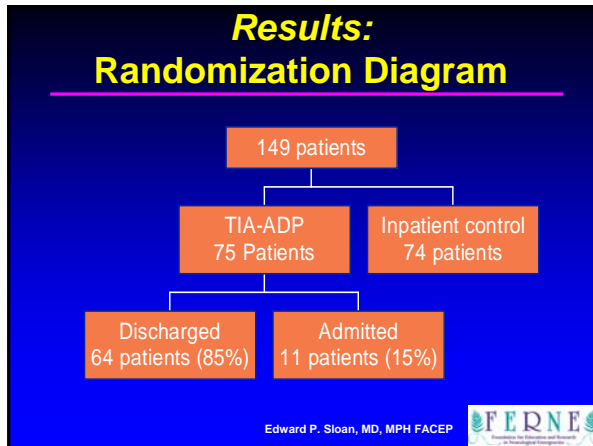


## Methods: ADP Disposition criteria

- Home
  - No recurrent deficits, negative workup
  - Appropriate antiplatelet therapy and follow-up
- Inpatient admission from EDOU
  - Recurrent symptoms or neuro deficit
  - Surgical carotid stenosis (ie >50%)
  - Embolic source requiring treatment
  - Unable to safely discharge patient

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### Results: Patient Characteristics

	Inpatient Total n=74	TIA-ADP Total n=75
Mean Age (sd)	67.7yr (15.4)	68.4yr (15.3)
Male n (%)	34 (46%)	31 (41%)
TIA Stroke Risk Factors - mean (sd) *	2.7 (1.4)	2.4 (1.1)
Median (IQR) Initial ED Length of Stay	6.2 hrs (5.0-6.2)	5.7 hrs (4.5-5.5)

\* Johnston - JAMA. 2000;284:2901-6.

- Similar clinical characteristics

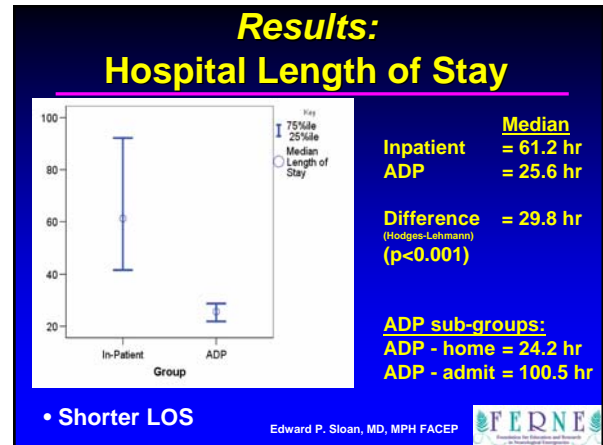
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### Results: Clinical Testing Performance

	Inpatient (n=74)	TIA-ADP (n=75)
<b>Carotid imaging</b>		
Number completed (n, %)	67 (90.5%)	73 (97.3%)
Time to completion	25.2 hr (17.3 - 37.1)	13.0 hr (8.4 - 18.0)
<b>Echocardiography</b>		
Number completed (n, %)	54 (73%)	73 (97.3%)
Time to completion	43.0 hr (23.8 - 63.8)	19.1 hr (16.7 - 22.5)

- Greater completion rate, shorter time

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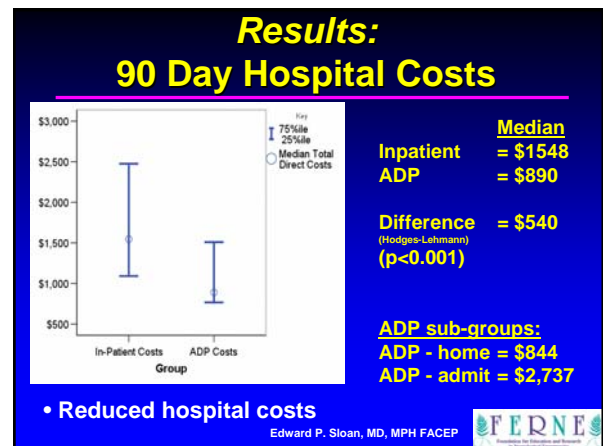


### Results: 90 Day Clinical Outcomes

90 Day Outcomes	Inpatient Total n=74	TIA-ADP Total n=75
Related return visits	9 (12%)	9 (12%)
<b>Clinical Outcomes</b>		
Index visit CVA	5	7
Subsequent CVA (90 day)	2	3
Total 90 day CVA	7 (9%)	10 (13%)
Related Major event or MACE	4	4

- Similar CVA outcomes

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## Ross Research Summary

A diagnostic protocol for TIA in an ED Observation Unit is more efficient, less costly, and demonstrated comparable clinical outcomes as compared to traditional inpatient admission for this same work-up.

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## EDOU Research Implications

- National feasibility of ADP:
  - 18% of EDs have an EDOU
  - 220 JCAHO stroke centers
- National health care costs
  - \$29.1 million potential savings if 18% of ED TIA patients evaluated with ADP
- Impact of shorter LOS
  - Patient satisfaction, fewer missed Dx . . .
  - Hospital bed availability

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## Conclusions

- Yes. An outpatient evaluation of ED TIA patients can occur successfully
- ED evaluation to include H & P, labs, EKG, CT Head (non-contrast), carotid doppler evaluation
- Must be able to detect clinically treatable causes of TIA and CVA
- Important work given outpatient reimbursement trends (prevent admits)

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## Conclusions

- Emergency Medicine provides the new standards for excellence in patient care
- Process-centered
- “Just get it done...”
- European Vision for Emergency Medicine...
- Expedited, comprehensive patient care



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## Recommendations

- Read the Ross research
- Develop a ED TIA patient protocol
- Get buy-in by involved services
- Study effectiveness locally
- Aggressively pursue reimbursement for this important clinical service
- Explore other outpatient options

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## Questions?

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