

## ASLS and MEND Presentations at the International Stroke Conference 2010-2015

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### ***Development of a Multi-county Emergency Medical Service Stroke Alert System and the Implications on Delivery of Care Justine Abram; Shands at the Univ of Florida, Gainesville, FL***

Background and Purpose: "Time equals brain" is a known fact among stroke practitioners so why not initiate a stroke alert system not from the Emergency Room but by first responders? Increasing our use of intravenous tissue plasminogen activator (IV t-PA) by the Hospital Stroke Team was the main objective of developing the Emergency Medical Service Stroke Alert System (EMSSAS). Methods: Guided by the American Stroke Associations guidelines for EMS treatment of stroke and the Miami Emergency Neurologic Deficit (MEND) exam the Stroke Coordinator, Aero-Medical Flight crew of RNs and paramedics, along with the Aero-Medical Director became instructors for the MEND exam. Once the instructors were certified, they did educational outreach to the surrounding counties for a one day eight hour class. A pre-hospital tool was developed by the Stroke Coordinator and Aero-Medical team to give the EMS personnel a checklist to review and assist in determining if they indeed needed to call a Stroke Alert. A system was set up using the existing Trauma Alert system for our facility, with pagers and numbers all programmed in to the Stroke Alert system and dispatch educated on the process. A review of each Stroke Alert was completed and feedback was given to the county representatives for each call. A review of all stroke patients by the Stroke Program Coordinator was completed on all IV t-PA patients and determined if they had a stroke alert initiated. Results: In 2006 we had no stroke alert system in place for our EMS. Initially in 2007 education was provided to 3 surrounding counties and in 2008 we educated 2 more counties. In 2006 IV t-PA was given in our Emergency Department 3 times, in 2007 IV t-PA was given 7 times, and in 2008 it was given 16 times proving that by educating our EMS on our EMSSAS program we can increase the amount of IV t-PA given. Conclusion: The development of the EMSSAS program showed improvement in our use of IV t-PA. As we continue to add more counties to our EMSSAS, our use of IV t-PA continues to rise. Evidence indicates that education and implementation of a multi-county wide Stroke Alert System expedites the patient care for an

optimal outcome.

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***Addressing the Need for Stroke Education Globally: Effectiveness of the Advanced Stroke Life Support Course (ASLS) for Prehospital and Hospital-based Healthcare Providers in Hong Kong.***

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Introduction: Comprehensive stroke education is necessary for rapid and effective diagnosis and treatment of stroke victims, especially in the prehospital and emergency department settings. Advanced Stroke Life Support (ASLS®) is a 1-day evidence-based stroke course consisting of 2 hours of lectures and 6 hours of interactive instruction. The participatory sessions include video-based cases where the learners diagnose and develop a management plan for patients with strokes or stroke mimics, skills sessions where learners evaluate standardized patients (portrayed by instructors) who simulate 5 major stroke syndromes (left hemisphere, right hemisphere, brainstem, cerebellum, and subarachnoid hemorrhage), and an interactive game as a course summary. Purpose: To assess the efficacy of a one-day interactive stroke course for prehospital and hospital-based providers in Hong Kong.

Methods:

We implemented the Advanced Stroke Life Support curriculum in the Hong Kong Hospital Authority through the Accident & Emergency Training Centre. The course was adapted minimally to ensure consistency with local practice and language variations. The instructors from Hong Kong initially participated in a train-the-trainer program in the United States prior to implementing the course. A total of 65 nurses, paramedics and physicians participated in the course between November 23, 2009 and May 9, 2010. Outcomes were measured using previously validated 20-item written precourse and postcourse assessments.

Results: The precourse assessment mean score for all participants was 13.88 (69.4%) and the postcourse mean was 17.83 (89.2%) ( $p < .001$ ). The mean improvement was 3.95 [SD 2.84, 95% C.I. 3.25-4.66] or 19.8%. Pretest scores were lowest for prehospital providers (12.78 (64%)),

followed by nurses (14.27(71%)), and doctors (15.00 (75%)). Prehospital providers had the greatest improvement in knowledge [5.61 (27.4%)] [Pre 63.89%, Post 91.25%], followed by physicians [3.50 (17.5%)] [Pre75.0%, Post 92.5%], and nurses [3.31 (16.5%)] [Pre 71.5%, Post 88.0%]. Conclusions: Prehospital and Hospital-based emergency providers in Hong Kong significantly improved their knowledge of stroke diagnosis and management after participating in a 1-day stroke course.

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International Stroke Conference Poster Abstracts

Session Title: Emergency Care/Systems Posters II

***Abstract 3468: Correlation of the Miami Emergency Neurologic Deficit (MEND) Exam Performed in the Field by Paramedics with an Abnormal NIHSS and Final Diagnosis of Stroke for Patients Airlifted from the Scene.***

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Introduction Early recognition and rapid transport to a stroke center by prehospital providers is essential in the care of stroke patients. In this study, prehospital providers were trained to perform the Miami Emergency Neurologic Deficit (MEND) exam as part of an 8-hour comprehensive course, Advanced Stroke Life Support (ASLS®). The MEND exam was devised to facilitate communication between healthcare providers throughout the continuum of care for stroke patients. It can provide a baseline exam in the prehospital setting, and then be used by nurses for initial evaluation and subsequent exams in the ED, ICU or hospital floor. The MEND exam incorporates all three components of the Cincinnati Prehospital Stroke Scale (CPSS) and six additional components from the NIHSS (level of consciousness,

orientation, commands, visual fields, gaze, leg motor, limb ataxia, sensation). The exam takes less than 2 minutes and requires no tools, making it ideal for the Prehospital environment.

Purpose: Determine the correlation of the MEND exam completed by a prehospital provider on scene to the initial NIHSS performed by the neurologist at the receiving facility, and the final diagnosis.

Methods: All prehospital providers from three Fire Rescue agencies participated in the training (96 EMT-P, 68 EMT, 5 RN). The Prehospital providers conducted the CPSS, and if abnormal, placed the helicopter team on standby. They then completed the MEND exam and communicated their findings to a receiving hospital stroke neurologist. We retrospectively reviewed the MEND exam performed by the prehospital providers to determine the correlation with the same components of the initial NIHSS at the hospital. While the NIHSS assigned a numerical value to those specific components, the MEND exam did not. Additionally, we examined the final discharge diagnosis to determine how many patients had a stroke or transient ischemic attack (TIA).

Results: From Sept. 2008 to June 2011, 51 patients met the criteria of having both a MEND exam and NIHSS completed. There were 32 males (63%) and 19 females (37%) with a median age of 67 years (44-98 years). The average NIHSS score was 9 (range 0-30). 90.2% (46 of 51) of patients had an NIHSS that correlated to the findings on the MEND (95% C.I. 90.1-90.3). Of the 5 remaining patients, 1 completely recovered on the flight (diagnosed with a TIA), and 3 had a NIHSS score of 0 and were diagnosed with other conditions. Stroke or TIA was diagnosed in 40 patients (78.4%). Of 37 strokes, 32 were ischemic (86.5%) and 5 hemorrhagic (13.5%). The 11 patients not diagnosed with a stroke had several other pathologies (e.g. seizure, hypertensive crisis, viral encephalitis, complex migraine).

Conclusion: The MEND exam completed in the Prehospital setting correlated well with the initial NIHSS performed at the receiving facility. The MEND exam is a valuable tool when assessing stroke patients and determining need for air transport.

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- International Stroke Conference Poster Abstracts

Session Title: Nursing Posters I

***Abstract W P364: Advanced Stroke Life Support: Making a Difference in Stroke Care***

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## Abstract

**Background and Purpose:** A Comprehensive Stroke Center provides many opportunities for interactions with smaller facilities. Needs identified by our community facility partners was a standardized and effective neurological assessment of the stroke patient that could be performed by all staff and staff stroke education. Investigation into the Advanced Stroke Life Support (ASLS) course provided information that would serve as a blueprint to resolve both education needs.

**Method:** Six staff members were certified as ASLS Instructors. ASLS course has been provided using didactic and hands on participation for scoring of patients with the Miami Emergency Neurologic Deficit (MEND) exam and stroke education. Participants were given a pre-test at the beginning of the educational experience, followed by a post test at the conclusion of class. Lectures included overview of five major stroke syndromes, basic MEND exam knowledge and scoring requirements, followed by review of treatment options and care provided once hospitalized. The learning opportunity was enhanced by interactive hands on session by each participant through performing the MEND exam on fellow participants and scoring of the MEND exam on scenario based test patients. Use of the interactive practice session with immediate feedback from instructors was key elements of student satisfaction and perceived learning during the educational experience.

**Results:** Initial class evaluations and changes in pre and post test scores indicate an increase in participant stroke knowledge. 47 of 50 failed the pre-test with scores ranging from 35 to 85. Upon posttest all participants passed with scores ranging from 80 to 100. There was an increase in proficiency using the MEND exam from the initial practice session to use during the test patient scenarios. Additional survey results will be obtained using post class value analysis survey at least three months after class completion to demonstrate participants' ability to apply knowledge to practice setting.

**Conclusion:** Completion of ASLS course provides an increase of stroke knowledge that promotes application of information learned to care of stroke patients in practice settings.

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State-of-the-Science Stroke Nursing Symposium Oral Abstracts

Session Title: Application of Evidence Based Practice and Quality Enhancement

***Abstract NS26: Pre-hospital Stroke Evaluation Using Expanded Stroke Screening Tools***

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## Abstract

**Background and Purpose:** The Cincinnati Pre-Hospital Stroke scale is a quick and accurate method for identifying stroke in the EMS setting. In 1999, Kothari et. al. demonstrated that the Cincinnati Pre-Hospital Stroke Scale (CPSS) identified 87% of acute anterior circulation strokes. We hypothesize that adding additional criteria from the NIH Stroke Scale to the CPSS will increase EMS providers' ability to recognize stroke syndromes beyond anterior circulation strokes in the EMS setting.

In Iowa, current EMS protocols use the CPSS for field stroke examinations as a minimum standard. The addition of additional elements from the NIH Stroke Scale that specifically evaluate posterior circulation should improve stroke recognition in the field. The Miami Emergency Neurological Deficit exam (MEND) specifically meets these criteria: it is based on the CPSS, and adds elements of the NIHSS that evaluate posterior circulation. This should allow EMS providers to triage and transport more patients to a primary stroke center.

**Methods:** A retrospective chart review was done within a 22 month period at a Joint Commission Certified Primary Stroke Center. Only patients with confirmed diagnosis of stroke were included; TIA and all other diagnoses were excluded. Patient symptoms were listed and the exam criteria for both the CPSS and MEND were applied. The vascular distribution of stroke for each patient was evaluated to confirm results. Results: 732 patients presented in the 22 month period. 468 (64%) were identified using CPSS criteria. 644 (88%) were identified using MEND criteria. This results in an increase of 176 (24%) patients who would have been recognized as experiencing an acute stroke using the MEND exam.

**Conclusion:** Use of an expanded stroke exam by EMS providers will result in a higher recognition rate for anterior and posterior circulation acute stroke.

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International Stroke Conference Poster Abstracts

Nursing Posters II

***Abstract TP351: A Collaborative Approach to Emergency Medical Service Stroke Training***

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**Background:** The prevalence of stroke is expected to increase. Emergency Medical Service (EMS) personnel play a critical role in the chain of survival for stroke with more than half of stroke patients utilizing EMS to access initial medical care. National guidelines recommend EMS educational programs with objectives that support steps considered critical for the use of time dependent therapies. Value Health Partners (VHP), an unique quality collaboration between seven nonaffiliated hospitals with a combined annual stroke admission volume of 2,756 and service covering 44 of the 81 Michigan counties, has developed a strategy to bring Advanced Stroke Life Support (ASLS)<sup>®</sup> training to their service areas. The curriculum targets National guideline objectives using interactive discussion, hands on demonstration and is designed in a train the trainer format.

**Purpose:** The purpose of this collaborative quality project is to utilize validated curriculum to improve and standardize pre-hospital care for patients with stroke symptoms within a large reach of Michigan communities.

**Methods:** Stroke clinical leaders from VHP met to coordinate the initiative with Michigan Department of Community Health and EMS. A grant to underwrite the cost of implementing the curriculum was written and accepted. Leaders collaborated on the development of a training schedule, implementation guide, advertising and registration process. Metrics were identified for future project impact analysis. Grant funds were allocated and a registration fee was identified as a strategy for securing future implementation funds.

**Results:** The collaboration and development of an implementation process among nonaffiliated hospitals established standardized training for EMS on pre-hospital stroke care which when completed will cover more than half of the state.

**Conclusions:** Nonaffiliated hospital and state level quality collaborations encourage networking, support standardization of best practice processes within a state and provide a potential significant impact on the health of the communities we serve.

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