

CDC Heart Disease and Stroke Prevention Program Grant Project Report:

**Michigan Emergency Medical Services Cardiovascular Disease (CVD) Assessment and Quality Improvement Initiative**

Heart Disease and Stroke Prevention Unit

*June 30, 2007- June 29, 2010*

**Introduction**

In June 2007, Michigan was awarded a grant from the CDC Heart Disease and Stroke Prevention (HDSP) Program to work on quality improvement activities with emergency systems of care as it relates to stroke and heart disease. This three year grant included close collaboration with the Michigan Department of Community Health (MDCH) Emergency Medical Services (EMS) and Trauma Section. This report describes the grant activities, collaborations, and accomplishments.

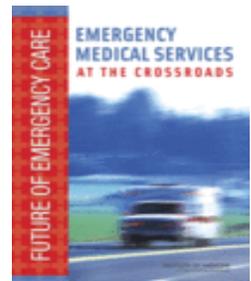
**Grant Goal and Objectives**

**Goal:** To collaborate with the EMS and Trauma Section and partners to describe the EMS CVD system of care, identify opportunities for improvement, implement interventions targeting improvement and evaluate successes and challenges incorporating sustainability.

- Objectives:**
1. Identify and convene experts and partners to guide the EMS assessment and recommend project interventions.
  2. Implement and evaluate a comprehensive heart attack and stroke EMS assessment targeting 65 Medical Control Authorities (MCA), 400 Life Support Agencies (LSA), and 110 Dispatch.
  3. Collaborate with system engineers to analyze EMS system and report recommendations to expert advisory groups.
  4. Begin implementation of quality improvement initiatives prioritized by expert group.
  5. Identify policy initiatives based on the findings of the assessment and the expert group recommendations.
  6. Promote and advocate for educational programs, protocol updates and a regionalized EMS system of care.
  7. Implement a reassessment to evaluate progress, remaining challenges and clarify questions on the initial assessment.
  8. Implement ongoing evaluation of progress and strategy success with identification of future steps.

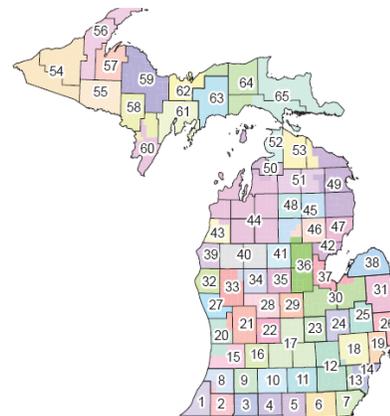
**Background**

The 2006 Institute of Medicine (IOM) Report “Emergency Medical Services at the Crossroads,” reported significant challenges facing the EMS system nationally, and Michigan faces similar issues. Michigan is large and diverse with contrasting regional needs. It has large rural areas usually staffed by volunteers and without easy access to acute heart attack and stroke centers. Urban areas have multiple EMS providers and the 2006 IOM Report cited a Michigan county that had one LSA using 18 different care protocols.



## Michigan's EMS System Challenges

- *The system is complex and resources are dwindling.* There are 65 different MCAs supervising the emergency care delivered in their jurisdiction as shown in the map. All LSAs must adhere to their MCA protocols, even if that means multiple protocols in the same county. The Dispatch Centers are supervised by individual counties. This much variation of administrative units complicates quality patient care in a time-critical, emergency situation. Communication is not always effective, quality improvement is sporadic and training (particularly in heart attack and stroke emergencies) is inconsistent with no required ongoing CVD competency requirements.
- *Locations for stroke care.* MDCH EMS Section staff initially was not aware of the designation of Primary Stroke Centers (PSCs); therefore, felt many EMS providers were unaware of these locations for acute stroke care. Michigan has gone from 13 PSCs in 2006 to 33 in 2010.
- *Limited administrative resources.* Michigan is one of only three states nationally that does not have a funded trauma system, (the other two states are Vermont and Idaho) despite trauma legislation that was passed in 2004. EMS Section staffing and funding is limited which constrains regional planning and support of quality initiatives.
- *A white paper* was developed by MDCH staff in EMS, Cardiovascular and Perinatal to address shared concerns for emergency care planning and coordination in Michigan. This led to a commitment to work together in future planning efforts.
- *No statewide electronic reporting system* was in place so there was no regular reporting of performance thereby limiting process improvement.



## Grant Activities - Year One

One of the first and critical activities in the grant was to learn more about EMS in Michigan – the structure, partners, protocols, regulations and how the system works or doesn't work. MDCH EMS and Trauma Section (EMS Section) staff was an active partner in the grant from the beginning, and without their dedication; this project would not have been successful. The collaboration that evolved with EMS and Trauma Section staff and partners was key to the success of this project.

An expert group (EMS Capacity Assessment Committee) was convened representing stroke, STEMI (ST elevation myocardial infarction) and other partners such as the EMS Coordinating Committee, American Heart Association, Michigan Hospital Association, Medical Control Authorities, Ambulance Service, Dispatch to name a few. Periodic meetings were held to develop the initial EMS assessment. This assessment of EMS capacity and needs related to cardiovascular emergencies was launched in March 2008. Three individual surveys were developed for MCAs, LSAs and Dispatch. Participants were asked to complete the web-based surveys at regular meetings, through mailed letter invitations and targeted phone follow-up. A report of the findings was prepared by the subcontractor, Public Sector Consultants, in June 6, 2008, titled *Assessment of Michigan's Emergency Medical Services for Cardiovascular Disease*. The results of this assessment along with the consultation from Systems Engineers would drive future interventions. These assessments were rich with information about EMS capacity for cardiovascular emergencies. The completion rate was 46% for MCAs, 41% for LSAs and 60% for Dispatch, and general findings were as follows:

- The primary needs and requests identified in the assessment were for more education and training in both stroke and STEMI.
- Another issue identified was inconsistent use of the Cincinnati Stroke Scale in acute stroke patients, even though this was part of the statewide protocol.
- Inconsistent communication between the supervising Medical Control Authority and EMS was highlighted as a problem.
- Respondents emphasized the need to promote the use of 12 lead ECG's, the lack of follow-up about patient diagnosis/disposition, and bypassing emergency rooms to go directly to catheterization labs and in some cases, CT scanner, was not considered. Activation of stroke or STEMI teams from the field was also not considered.
- Awareness of Primary Stroke Center locations was inconsistent.
- Quality improvement processes were lacking.

The Systems Engineers provided consultation about the functioning of the current EMS system, issues to focus on, and suggestions for change. Their key messages were:

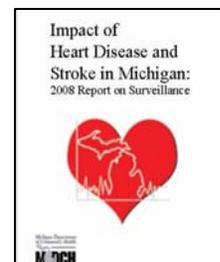
1. there is a need for consistent protocols and protocol implementation,
2. consistent and well-known standards need to be promoted,
3. monitoring and reporting of time at different points of service must be done, and
4. ongoing quality assurance and feedback must be implemented.

Using their own evaluation and incorporating results from the online assessment, they offered the following advice:

- The service goal must be widely known, consistent, unified, simple and acceptable to all stakeholders such as “The right patient, to the right place at the right time.”
- This very complex system is not easy to understand and each area has its own unique challenges. When you’ve seen one EMS system, you’ve seen ONE EMS system. There is a natural inclination to keep the status quo and this is especially true in EMS due to trepidation related to market share, losing status, concerns about disrupting established practice patterns, mutual aid agreements etc.
- All individuals involved must have a desire to ensure the best care and outcomes for patients and residents who use their system and goals should be continuously reviewed.
- Everyone needs to feel empowered, heard and have their concerns addressed.

Concurrent with these discussions MDCH staff attended two Michigan Chapter of the American College of Cardiology “Door to Balloon” workshops. These workshops highlighted findings from their statewide project and the significance of addressing STEMI in a timely fashion using a systems of care approach.

Maps and data were published in the HDSP burden report, *Impact of Heart Disease and Stroke in Michigan, 2008*. This information was incorporated into presentations, publications and educational material disseminated in this EMS project.



## **Grant Activities - Year Two**

As year two began, the EMS Capacity Assessment Committee was expanded to become the EMS Task Force which would provide recommendations and guide future activity. Projects that follow reflect the guidance from this group.



### **EMS Stroke Education**

The first recommendation of the EMS Task Force was to increase stroke training and education. After review of available programs, it was suggested that the University of Miami Advanced Stroke Life Support (ASLS) curriculum be purchased for use in Michigan. The training was developed for EMS providers by the Michael S. Gordon Center for Research in Medical Education at the University of Miami. This program focuses on pre-hospital and general management of acute stroke. The program uses interactive discussion, hands on demonstration and multi-media. Content includes

- recognition of the 5 main stroke symptoms,
- t-PA considerations and contraindications, and
- neurologic assessment and management of the stroke patient.

This program had been used successfully by other states for EMS education. MDCH brought in University of Miami educators to provide two train-the-trainer sessions. MDCH was responsible for supporting and coordinating all the training sessions. A total of 76 EMS Instructor Coordinators were trained and they have now presented the class to over 300 EMS providers. One instructor from a remote location in Northern Michigan commented, “Thank you for your participation in one of the best programs that I have attended in many years. I would like to do this program for all members of our local rural EMS group.” One workshop was attended by EMS providers from Ontario, Canada who had also expressed interest in doing the trainings in that Province. Northern Michigan Regional Hospital sent staff directly to the University of Miami to learn the curriculum for hospital staff as well as EMS and they in turn did trainings in their region upon their return. MDCH stores and loans material to EMS Instructors to promote utilization, reduce expenses and ensure tracking of classes and numbers of EMS providers trained. Using the train-the-trainer model, and targeting EMS Education Coordinators has ensured ongoing sustainability.

### **Laminated Stroke Pocket Cards**

To reinforce the concepts disseminated by the ASLS trainings and to correct gaps in knowledge identified in the assessment, MDCH and the EMS Task Force developed 4x6 laminated pocket guides for pre-hospital stroke care. Cards emphasized the statewide EMS stroke protocol, knowledge of Primary Stroke Centers, reporting time “last seen normal” and other key stroke information. Card A had a map of all the hospitals in the state which were The Joint Commission certified primary stroke centers (2008), and the names of the hospitals were listed on the back of the card. Card B had the pictures of the Cincinnati Stroke Scale on the front along with reporting “time last seen normal” and a thrombolytic checklist. The statewide Michigan EMS Adult Treatment Protocol for Cerebrovascular Accident (CVA, Stroke) was on the back with key information to report to the emergency department.

Three sides of the cards are shown here.

Card A



Card B



**Pilot Evaluation of the Cards**

The stroke laminate cards were pilot tested with an MCA and one large EMS agency in southeast Michigan. The objective was to see if the cards increased the knowledge and documentation of Cincinnati Pre-hospital Stroke Scale (CPHSS), symptom onset time and reporting of the time last seen normal. Four months of pre-intervention data were collected, followed by a simple educational intervention (laminated stroke cards were distributed along with a flyer about the importance of last seen normal and the CPHSS). Through a combination of handouts, email and electronic bulletin board announcements, EMS providers were educated and reminded about the importance of reporting the CPHSS, symptom onset time, last seen normal and using laminate pocket cards as reinforcement. Results of the pilot were based on 212 chart reviews and showed the:

- CPHSS documentation rose slightly from 76.95 to 79.4%,
- symptom onset time increased from 67.9% to 87.9%, and
- “last seen normal” time documentation increased from 18.4% to 26.8%.

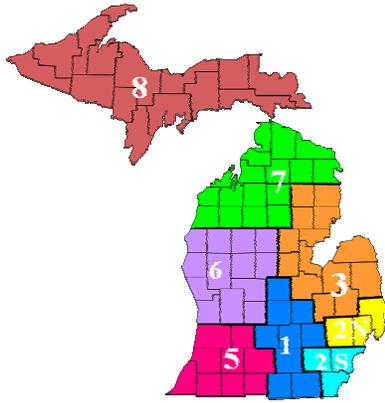
This pilot project demonstrated the success of the cards and was submitted as a poster presentation for the International Stroke Conference 2010. After the positive results of pilot project and feedback from users in the field, the laminated cards were updated and reprinted to reflect new statewide protocol, lessons learned from the study and user feedback. One secondary benefit from the development and promotion of the cards was that the state EMS stroke protocol was updated to incorporate obtaining and documenting “time last seen normal,” since this was not included in prior statewide protocols.

**Signs and Symptoms Campaigns**



Public awareness is a vital link in the survival chain of events for heart attack and stroke. Public awareness campaigns must have a consistent message about signs and symptoms of heart attack and stroke emergencies. In Michigan, the state stroke advisory group, the Michigan Stroke Initiative (MSI), was asked to provide advice about which stroke public awareness messages should be used. Three different national campaigns were presented with their accompanying research or lack of it. The consensus from MSI was that the FAST campaign, shown here, was preferred. The FAST (F-face A-arm S-speech T-time) campaign is an evidenced-based public

health message about stroke signs/symptoms, need to call 9-1-1, originally developed by Massachusetts Public Health Department. The key messages are based on the Cincinnati Stroke Scale and pictures as well as an acronym were used to promote a memorable message. Materials were ordered by MDCH and mailed to Michigan acute care hospitals for use in their stroke education campaigns during Stroke month in May, 2008. Over 15,000 copies of the FAST material were mailed in 2008, 12,000 in 2009 and 23,000 in 2010.



### Movement to Support Regionalization

It became increasingly clear from the assessment findings, recommendations from the systems engineers and experience from field interventions that a regionalized approach to emergency response will be essential to improve and enhance pre-hospital care for all time dependant emergencies, including stroke and STEMI. A regionalized system of emergency care would lead to more accountability coordination and efficiency. After much discussion within MDCH and with many advocates and stakeholders, a commitment was made to support funding for a statewide Trauma System that would have eight regions shown to the left. This would build a foundation for adequate administration, leadership and data to support a true system of care

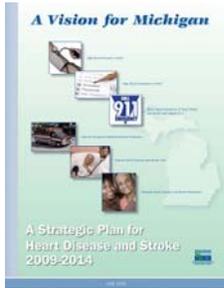
approach. The 8 regional areas utilized were already designated in the 2004 Trauma Rules used by Dispatch and the Office of Public Health Preparedness.

### Flyer to Educate Decision Makers

To assist in informing partners, legislators, and others to understand the complexities of the EMS and Trauma Systems and to appreciate how funding this statewide regional system would help, an educational flyer was developed describing the issue in simple terms. The flyer was supported by American Heart and Stroke Association, American Cancer Society, Michigan Chapter of the American College of Cardiology, Michigan Cardiovascular Alliance, Emergency Medical Services Coordination Committee, Michigan College of Emergency Physicians, Michigan Council for Maternal and Child Health, Michigan Crime Victims Services Commission, Michigan Health and Hospital Association, Michigan Stroke Initiative, Michigan Trauma Coalition, Office of Public Health Preparedness, State Trauma Advisory Subcommittee, March of Dimes, Perinatal Care Group and Prosecuting Attorneys Association of Michigan. These partners were important in ensuring a consistent and critical message was heard. About 1,500 copies of these flyers have been distributed by advocates. This broad-based and active partnership has been key in continuing to move this initiative forward in these tough economic times. Multiple meetings were held with partners to provide information and strategize for continued advocacy efforts. Some of the stated benefits to regionalization is streamlining communication from top down and bottom up so problems and issues can be addressed expeditiously, ensuring changing science is quickly disseminated into the field, repatriating patients back to their own community when feasible if care outside of their home base was needed, making training and education more efficient, allowing for more quality improvement initiatives, sharing and allocating resources for optimal patient benefit and eliminating redundancies.



## EMS Quality Improvement Incorporated into Heart Disease and Stroke 2009 Strategic Plan



Strategies were developed in the 2009 HDS Plan that addressed both signs and symptoms of heart attack/stroke and emergency response plus improving the quality of EMS care for heart attack and stroke. Specific objectives targeting 2014 included:

1. Increase the proportion of adults, 18 years and older who can identify three or more heart attack warning signs by 3%.
2. Increase the proportion of adults, 18 years and older, who can identify three or more stroke warning signs by 3%.
3. Increase the proportion of adults, 18 years and older, that would call 9-1-1 when they recognize someone having a stroke or heart attack to 90%.
4. Improve the quality of pre-hospital heart attack and stroke care.
5. Use the designated regional areas in the trauma system structure to improve stroke and heart attack systems of care in three regions.

### Dissemination of Grant Experience

Information and products developed in the grant were shared with other state HDSP programs. This was done through a presentation at the CDC monthly All-State call, GIS presentations at Duke, HDSP Annual Grantee Meeting and several Great Lakes Regional Stroke Network meetings. Presentations within Michigan were given at the EMS Coordinating Committee, a group who is responsible for EMS coordination in Michigan, three EMS Expos on stroke, systems of care, STEMI and ASLS. Over 250 EMS providers attended these sessions. A presentation was given to Robert Wood Johnson Scholars and periodic updates were provided at MSI and the Michigan Cardiovascular Alliance.

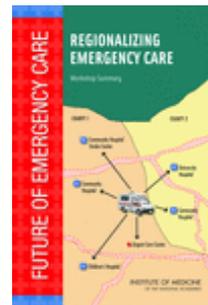
During this period, time and attention turned to STEMI due to growing demand. AHA *Mission Life Line* had been launched nationally and in Michigan. MDCH participated in multiple meetings including the launch of the initiative, workgroups and monthly conference calls.

### Grant Activities - Year Three

Advocacy supporting the concept of EMS regionalization grew in year three.

“Regionalization is a verb that involves utilizing resources and creating a hierarchical system that pulls together all elements as they exist in a community in order to optimize what they can do. The aim is to get the right resources to the right patient at the right time, which may not even involve moving the patient.”

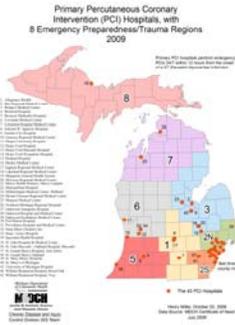
*Regionalizing Emergency Care Workshop Summary, 2009.*



The EMS Section began steps to implement the concepts of regionalization, using existing limited resources in the proposed trauma system regions. The regions were called “Regional Trauma Networks.” These eight Regional Trauma Networks are meeting regularly, defining their organizational structure, bylaws, protocols, membership etc. Staff from both HDSP and EMS and Trauma System has been attending these meetings to provide updates, guidance and to remind the groups that while they consider trauma issues in regional network discussions, other time dependant emergencies should be considered such as stroke and heart attack and pediatrics. To date, HDS staff has attended four regional meetings and more are being scheduled.

## Legislation Introduced

Because of the support of many advocates and partners and the significant amount of education that was done, bills to fund a statewide trauma system were introduced in the House and Senate. The House bills 5661, 5666 and 5667 were passed in February by the full House. Senate Bills 1002, 1003 and 1004 remain in Senate Appropriations as of this writing. Partners continue their advocacy and work continues to support this legislation.



## GIS Maps Developed

A wide range of maps were created to assist telling the story of heart attack and stroke emergencies in Michigan as well as resources in different geographical areas. Maps showing the Primary Stroke Centers, the hospitals capable of doing quick interventions for acute myocardial infarctions (PCI or Percutaneous Coronary Interventions) and the specific Medical Control Authority Areas are some examples of those developed and made available to partners.

## STEMI Educational Initiatives

Like stroke, training issues related to STEMI were first identified in the assessments, 56% of Life Support Agencies surveyed in the first assessment reported using 12 lead ECG's in the field, 38 % reported never providing 12 lead ECG **training** to staff. This was addressed by the development of another 4x6 laminated card and the implementation of an online ECG training called "*Learn Rapid STEMI ID*" supported by AHA.

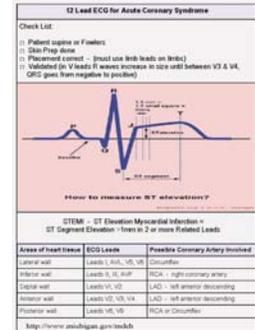
Lead	Lead I	Lead II	Lead III	Comments
Normal Axis				
Right Axis Deviation				Admission Hemiblock
Left Axis Deviation				Pretertiary Hemiblock
Left Bundle Branch Block				Wenckebach 1st degree

**Michigan Adult Cardiac Protocol - 12 Lead ECG for Acute Coronary Syndrome**

The goal is to reduce cardiac workload and to maximize myocardial oxygen delivery by reducing anxiety, appropriately oxygenating and relieving pain.

**Pre Hospital Care:**

- Follow General Pre-Hospital Care Protocol and administer oxygen as indicated.
- Acquire 12 lead ECG and transmit to hospital if time allows (within 10 minutes of onset or within 20 minutes of arrival at hospital).
- Assess patient in the use of their own 12-lead ECG (if available) to check expiration date of electrodes and if the patient's system is in good working order.
- Assess patient in the use of their own aspirin, up to 325mg/once and swallow if no aspirin within 24 hours.
- Do Not Delay Transport.
- Start oral Nitro Glycerin if the patient has a systolic BP of less than 100mmHg, no history of MI, and no contraindications to nitroglycerin.
- Obtain 12 lead ECG if available. Patients have RCA transport protocol if ECG is available for acute ST Segment Elevation Myocardial Infarction (STEMI) and alert hospital as soon as possible.
- Administer morphine 2-4 mg sublingual if systolic BP is above 100 mmHg. One may repeat 2-4 mg in 15-30 minutes if needed.
- Administer aspirin 325 mg (chew and swallow if no aspirin within 24 hours).
- Contact Hospital Center.



### Learn Rapid STEMI ID Program:

- Emphasis on immediate recognition and treatment of acute coronary syndrome (ACS)-STEMI.
- Improved awareness and need for healthcare system readiness and response to STEMI patients to close the gap in timely access.
- Definition of ACS and distinguishing STEMI for ECG mimics of STEMI.
- Self assessment (naming of leads, regions of heart, measuring ST deviation and correlating regional changes).
- Including a STEMI practice exam and STEMI certification exam.

The *Learn Rapid STEMI ID* educational program was purchased from AHA by MDCH for 12 EMS providers. This online course was offered to the participants free of charge. Since EMS providers have limited time for classroom instruction, this was a pilot to evaluate whether the course worked as well as an in person session. To date the keys have been activated by only 4 EMS providers and 3 of those actually completed the entire course.

**eLearning:**

**Stemi-ST Elevation Myocardial Infarction**

The Michigan Department of Community Health and the American Heart Association are collaborating to offer an online training program designed to improve acute myocardial infarction decision-making skills using 12 lead ECG and recognizing appropriate patient triage and treatment for ST elevation MI patients.

MDCH is looking for volunteers who are interested in completing this 4 hour online course. The course is free for a limited number of volunteers. A pre-test and post test must be completed as well as a course evaluation and submitted to MDCH. All participants will be asked to attend one conference call at the conclusion of the pilot to discuss the process and provide feedback about offering similar trainings in the future.

**This online course covers:**

- Understanding ACS symptoms and causes
- Acquiring an accurate ECG
- Coronary Anatomy related to 12 lead ECG
- STEMI recognition
- ECG mimics of STEMI
- Indications for Activating a Heart Alert System

If you are interested in participating in this pilot, please contact Eileen Worden, Michigan Department of Community Health at (517) 335-9005 or [eworden@mdch.state.mi.us](mailto:eworden@mdch.state.mi.us). Spots are limited, this offer will expire soon!

American Heart Association  
Learn and Live

Michigan Department of Community Health  
MDCH

Key informant interviews were conducted to evaluate the program and the results were as follows:

- The post test exam is very long (50 ECG's have to be read and interpreted) and an incomplete test was counted as one attempt (only three attempts were given to pass).
- The criteria for successfully reading the ECG are very strict, (85% or higher correct) and there is no way to return to look at the section of the program to see where the mistakes have been made.
- Overall the content was useful in reinforcing the concepts related to STEMI care.
- The course took about 4 hours to complete and one provider mentioned this may contribute to the slow uptake on using this online training.
- One provider mentioned that he might run 3 ECG's a week in the field for a variety of reasons so use of this information is not frequent. Also, sometimes an ECG in the field will not be positive and will only convert when the patient arrives in emergency room.

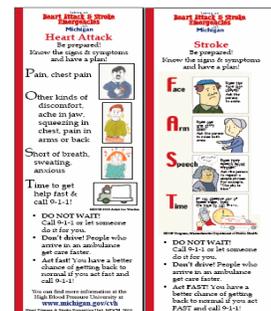
### EMS Reassessment

A follow-up EMS assessment was developed in collaboration with the original EMS Task Force. Some of the same questions were asked as well as new ones, such as air medical transport and the use of the MEND exam (germane only to the University of Miami trainings and could serve as a benchmark for dissemination of that training). The response rates were as follows: 55% MCAs, 26% LSAs, and 56% Dispatch. A summary of the results in June, 2010 are shown below:

- 66.7% of Medical Control Authorities do not have a specific protocol for STEMI.
- 44.4% of Medical Control Authorities **require** 12 lead ECG's.
- 38.9% of those surveyed **were aware** of the MEND exam taught at the Advanced Stroke Life Support class supported by MDCH, indicating that the information in this curriculum is being disseminated.
- 88.9% surveyed are participating in the Regional Trauma Network meetings.
- 83% prefer classroom style training.
- 27% of LSA were able to obtain disposition information on STEMI/Stroke patients (58% cite HIPPA as the reason).
- 17% of Dispatch Centers do not consider possible stroke as a Priority One call.
- 30% of Dispatch Centers do not have a stroke protocol.
- 52% of Dispatch Centers do not have quality improvement programs in place.

### Public Awareness Campaigns

Also in year three MDCH staff continued to work on stroke and heart attack public awareness campaigns primarily disseminated during May. FAST material was printed within Michigan this year and new products were developed that paired the pictured FAST message with a newly designed one for heart attack. This message was POST (P-pain, O-other kinds of discomfort jaw, arms or back,



S-shortness of breath or sweating, T-time to get help fast 9-1-1.) The bookmark to the right displays the messages. These bookmarks were incorporated in the WISEWOMAN program and are also promoted in the High Blood Pressure University (HBPU) at [www.michigan.gov/hbpu](http://www.michigan.gov/hbpu). Another example of material in the HBPU promoting awareness of stroke and heart attack signs and symptoms is the CVD Risk Screening Form. This form shown to the left, incorporated clinical guidelines for community screenings and the carbon copy for patients has messages that used both the FAST and POST information. Both of these free handouts can be found at [www.michigan.gov/hbpu](http://www.michigan.gov/hbpu). The HBPU material was sent to 1,200 of our statewide partners which included hospitals, EMS providers, state professional organizations, community based organizations, public health agencies and other health professionals. Evaluation is being implement in Fall 2010 to assess the impact of this campaign.

A detailed form titled 'Stroke and CVD Risk Screening Form' with various sections for patient information, risk factors, and screening results.

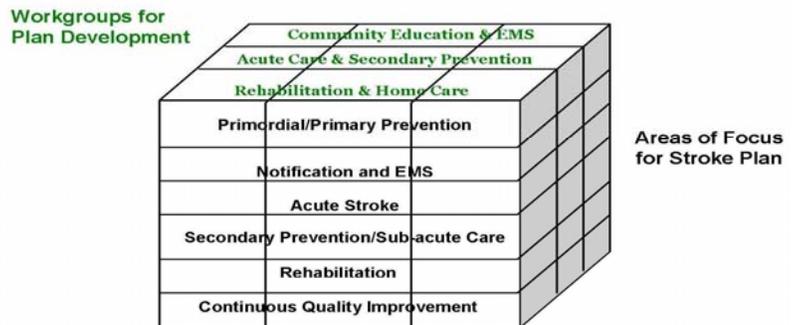
**Publications**

MDCH staff contributed to three papers focusing on stroke awareness and knowledge of signs and symptoms of acute stroke and heart attack (see Appendix for detail). The first paper described the level of knowledge regarding risk factors for stroke and heart attack among White and African American adults in Michigan to evaluate racial disparities. The second article used Michigan BRFSS data to describe the lack of association between stroke symptom knowledge and intent to call 9-1-1, emphasizing the critical role of motivation in addition to symptom knowledge to reducing delay in time to hospital arrival for stroke. The third paper described stroke awareness campaigns and stroke awareness surveillance data. The paper summarized 12 studies of effective stroke campaigns and summarized efforts by three states (Michigan being one) to develop, implement and evaluate stroke programs, as well as lessons learned.

**Stroke Systems of Care RFP**

MDCH submitted an application to The Association of State Territorial Health Officials (ASTHO) in response to a funding proposal request to develop state comprehensive stroke systems of care plans. The plan incorporated primordial and primary prevention, notification and response of EMS, acute stroke treatment, sub-acute stroke care and secondary prevention, rehabilitation and continuous quality improvement activities. While the project was not funded the application process assisted in formalizing some of the discussions that had been occurring with partners and others related to regionalization. The above model provides an overview of the components of plan.

Michigan Stroke Systems of Care Plan Development Model



**Convening a Regionalization Conference:**

A symposium was identified as important strategy to assist partners in stroke, STEMI, EMS, Trauma and Perinatal/Peds to better understand the trends in regionalization of emergency care as well as the benefits and challenges of implementation. This conference, *Regionalization of Emergency Care: It's Not a New Idea!*, would be the first opportunity for interested partners to learn more about this concept and understand how emergencies such as stroke and STEMI are important in the discussion. With the growing impetus of regionalizing emergency care

**Regionalization of Emergency Care ... It Is Not A New Idea!**  
 August 12, 2010  
 Lexington Hotel, Lansing, MI  
 REGISTRATION FORM  
 (or register online @ [www.mcccp.org](http://www.mcccp.org))

NAME \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY, STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
 PHONE \_\_\_\_\_  
 E-MAIL \_\_\_\_\_  
 COUNTY \_\_\_\_\_ REGION \_\_\_\_\_

REGISTRATION FEE \$75

Check Enclosed    VISA    American Express

CARD # \_\_\_\_\_  
 EXPIRATION DATE \_\_\_\_\_  
 SIGNATURE \_\_\_\_\_

Register with:  
 MCP  
 2011 West St. Joseph Hwy.  
 Lansing, MI 48917  
 517.325.5100  
 FAX 517.327.7330  
[www.mcccp.org](http://www.mcccp.org)

TARGET AUDIENCE:  
 MD, MA, Trauma Medical Directors & Physicians, Trauma Instructors, EMS, Emergency Physicians, All State, County & Local Emergency Medical Services, EMS, MI, MI Commission on EMS, MI, MI State & other trauma reader partners

**Regionalization of Emergency Care ... It Is Not A New Idea!**

PROGRAM SCHEDULE

7:00 - 9:00 a.m. Registration/Continental Breakfast  
 8:00 - 8:30 a.m. Stroke Systems of Care  
 8:30 - 9:30 a.m. "Regionalization: From a National Perspective" - Greg Williams, MD, FACEP  
 9:30 - 10:30 a.m. Regionalization of Trauma Networks - Robin Shihay, MD, FACEP  
 10:30 - 11:45 a.m. BREAK

Getting the Right Patient to the Right Place at the Right Time: How do other Emergencies do it?  
 11:45 - 12:00 p.m. Stroke Systems of Care  
 Christopher Lewandowski, MD, FACEP

12:00 - 1:30 p.m. LUNCH

1:30 - 2:30 p.m. E-911 Systems of Care  
 Jeffrey Haskins, MD

2:30 - 2:45 p.m. Pediatric Systems of Care  
 Stephen Knapp, DO, MBA, FAAP, FACEP

2:45 - 3:45 p.m. BREAK

3:45 - 4:45 p.m. Integrating the System with Quality Care  
 Dan W. Wilson

4:45 - 6:30 p.m. Questions and Answers/Wrap up  
 Ronald Dunn, MD, FACEP

FACULTY	OBJECTIVES
Robert B. Dunn, MD, FACEP	<ul style="list-style-type: none"> <li>Recognize and discuss information available among Partners, State and Local partners to facilitate regionalization of emergency care.</li> <li>Recognize how to operate in a formalized quality assurance system which addresses the needs of the delivery system and ensures the right patient is in the right place at the right time.</li> </ul>
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nationally, and the slow but steady movement in Michigan to implement a regional structure, this statewide conference was timely. The all-day conference was attended by 219 and featured a national expert speaking on “Regionalization from a National Perspective.” MDCH EMS staff provided an update on the EMS and Trauma Systems and the movement to discuss systems in a regional framework. Then speakers from stroke, STEMI and pediatrics spoke to the advantage of a regional system for those specific emergencies. The closing speaker from the Michigan Hospital Association discussed the importance of assuring a quality service and incorporating ongoing process improvement activities. Evaluations showed attendees were from all regions in the state and represented a broad range of health professionals, administrators and decision makers. Results show that 67% of attendees rated the conference as above average or outstanding and 89% said the content was just right.

**Summary**

Improving emergency medical responses to stroke and heart attack in Michigan is complex and has many challenges. However, significant progress has been witnessed in the three years of this grant such as collaboration with diverse partners; development and dissemination of effective educational tools and programs; advocacy for statewide protocol revisions, advancement of legislation for funding a regional trauma system and dissemination of information such as maps, flyers, bookmarks and forms. Key elements for a regionalized, coordinated and accountable system still need to be put into place. Some of those elements include ongoing data reporting, quality assurance, communications and systems of care planning. Training will need ongoing support and opportunities to learn new science needs to become an integral part of the educational program. State protocols need to continuously reflect the best, up-to-date science.

There is consensus from key leaders and advocates in Michigan that there needs to be a planned system of emergency care. This is just the beginning however. When trauma system funding is obtained, considerable work will be needed to develop a successful regional system of emergency care. Without a doubt there exists a passion to do the right thing and the mantra that the “right patient gets to the right place at the right time” resonates with all involved and has even been expanded to say, “Get the right patient by the right providers to the right place that has the right providers at the right time.” The Heart Disease and Stroke Prevention Unit will continue to work with the EMS and Trauma Section and partners to improve the emergency medical services to cardiovascular patients in Michigan and looks forward to helping plan regional systems of care that include heart attack and stroke components.

The reach and impact of this grant is broad as shown by the data below:

Activity or Project	Reach	Impact
Signs/Symptoms/Call 9-1-1	23,000	Through hospital, EMS partners and other community groups, awareness campaigns were launched during May emphasizing the FAST messages and in the final year, POST messages for heart attack awareness.
EMS Reassessment: Medical Control Author. Life Support Agencies Dispatch	65 x 2 400 x 2 110 x 2	Completed an initial assessment and report that described the capacity and needs in the EMS system with a CVD focus. A reassessment was implemented in the final year to monitor improvements and describe new issues.

EMS Stroke Laminates	3,000	Ongoing reminders and educational prompts for EMS providers focusing on key stroke clinical assessments such as the Cincinnati Stroke Scale (CPHSS), last seen normal, and statewide stroke protocol. Pilot showed improvement in assessments and reporting.
EMS STEMI Laminates	3,000	Ongoing reminders and educational prompts for EMS providers focusing on key STEMI clinical assessments such as examples of EKG readings and the statewide cardiac syndrome protocol
Pilot test of stroke laminate, key messaging and documentation.	212 stroke patients reviewed	CPHSS reporting increased from 77 to 79%, reporting last seen normal increase for 18 – 27%, symptom onset increased 68% to 88%.
Advanced Stroke Life Support (ASLS) trainings	79 Instructors trained 350 EMS personnel	Built capacity in 79 Instructor Coordinators to teach ASLS course. Over 350 EMS personnel have been trained and evaluations have continued to be positive. Training has EMS contact hours and will continue to be offered in future years. Hospitals are investing in inpatient training for their own staff.
STEMI Online Educational Program	12 training opportunities promoted to 620 EMS providers	This independent training program designed for AHA was not well-received. Only 3 EMS providers completed the free course despite aggressive outreach. Feedback was they prefer in-person trainings, course was too difficult and time consuming. A lesson-learned for future.
Stroke Educational Presentations	Presentations at 3 EMS Expos: 250 total attending	Expanded knowledge of acute stroke clinical guidelines and enhanced networking. Disseminated tools and reinforced key messages.
Support advocacy for trauma system funding: Flyer, etc	16 key advocates 1,500 educational flyers distributed	Legislation introduced and passed the House. Pending approval in the Senate. This was a key opportunity to educate decision-makers and those outside CVD.
Regionalization Conf.	219 attended (1,300 invited)	Increased awareness and understanding of regionalization concepts, and rationale for incorporating stroke, STEMI, in planning.
Regional Trauma Network (RTN)	Participated in 4 RTN meetings	Early inclusion in meetings has built relationships and is the foundation for future planning.
Policy Change	2	Influenced update to state stroke protocol and established stroke/STEMI subgroups in RTNs.
AHA Mission Lifeline	1 conf. + 20 conf calls	Guidance provided to keep the progress of this initiative consistent with state EMS and regionalization planning.

To view the reports, tools or resources cited in this report you can go to the MDCH website at [www.michigan.gov/cvh](http://www.michigan.gov/cvh) or contact Velma Theisen at [theisenv@michigan.gov](mailto:theisenv@michigan.gov).

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