

SYSTEMS OF CARE FOR TIME SENSITIVE EMERGENCIES

- ▶ Michigan Stroke System
- ▶ Michigan STEMI System

Bureau of EMS, Trauma and Preparedness
Michigan Department of Health and Human Services

June 2019



Introduction: Systems of Care for Time Sensitive Emergencies

- **Stroke and STEMI are highly time sensitive medical emergencies. Every minute lost from the onset of stroke or ST-elevation myocardial infarction (STEMI) symptoms to specialized treatment results in some loss of brain or heart tissue and the loss of some degree of personal function.**
- **Medical research and the experience of other states has demonstrated that a formalized system of stroke and STEMI care that includes timely recognition of symptoms, prompt medical diagnosis and access to a specialized treatment center will improve the patient's probability of survival and a decrease in long term disability.**
- **MDHHS convened the Systems of Care Task Force on June 20, 2011 and reconvened the Expert Writing Group in 2017 to develop a System of Care for stroke and STEMI.**
- **The following 13 Recommendations for stroke and STEMI are the foundation for the Systems of Care for Time Sensitive Emergencies.**

Recommendations

**THE RECOMMENDATIONS FOR
STROKE AND STEMI SYSTEMS OF
CARE ARE SHOWN SIDE BY SIDE
FOR EASE OF COMPARISON AND
TO LIMIT REPETITION.
DIFFERENCES ARE HIGHLIGHTED
IN RED.**

Systems of Care for Time Sensitive Emergencies

Michigan Stroke System

Recommendations

Michigan **STEMI** System

Recommendations

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

1. Authorize Michigan's Lead Agency for a Statewide Stroke System
 - In Michigan, the lead agency for Stroke Systems will be the Bureau of EMS, Trauma and Preparedness in the Michigan Department of Health and Human Services.
 - The Bureau will:

Leadership and Governance

1. Authorize Michigan's Lead Agency for a Statewide **STEMI** System
 - In Michigan, the lead agency for **STEMI** Systems will be the Bureau of EMS, Trauma and Preparedness in the Michigan Department of Health and Human Services.
 - The Bureau will:

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

– The Bureau will:

1. Implement and maintain a statewide plan for a regionalized stroke system that is based upon the structure and governance of the current eight Regional Trauma Networks, comprised of the local medical control authorities within the region.
2. Develop a process for the verification of hospital resources for the care of stroke patients.
3. Develop a process for designation of stroke facilities.

Leadership and Governance

– The Bureau will:

1. Implement and maintain a statewide plan for a regionalized **STEMI** system that is based upon the structure and governance of the current eight Regional Trauma Networks, comprised of the local medical control authorities within the region.
2. Develop a process for the verification of hospital resources for the care of **STEMI** patients.
3. Develop a process for designation of **STEMI** facilities.

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

- The Bureau will:
 4. Develop a statewide stroke data collection and performance improvement process.
 5. Establish evidence based statewide stroke care guidelines.
 6. Approve regional stroke triage and destination protocols for EMS.

Leadership and Governance

- The Bureau will:
 4. Develop a statewide **STEMI** data collection and performance improvement process.
 5. Establish evidence based statewide **STEMI** care guidelines.
 6. Approve regional **STEMI** triage and destination protocols for EMS.

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

2. Implement an All Inclusive Stroke System

The department will implement a voluntary, “all inclusive” system of care for stroke throughout the state, which provides for the treatment of all stroke patients throughout a continuum of prehospital, hospital and post-hospital care. This system allows for hospitals to voluntarily participate at the level of care at which they are able to commit to, and are able to provide the resources required for, the appropriate management of the stroke patient.

Leadership and Governance

2. Implement an All Inclusive **STEMI** System

The department will implement a voluntary, “all inclusive” system of care for **STEMI** throughout the state, which provides for the treatment of all **STEMI** patients throughout a continuum of prehospital, hospital and post-hospital care. This system allows for hospitals to voluntarily participate at the level of care at which they are able to commit to, and are able to provide the resources required for, the appropriate management of the **STEMI** patient.

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

2. Continued

Implement an All Inclusive Stroke System

An all inclusive stroke system ensures that stroke patients are treated in a system of coordinated care based upon stroke acuity and the level of intervention and care required for optimal patient outcome.

Leadership and Governance

2. Continued

Implement an All Inclusive **STEMI** System

An all inclusive **STEMI** system ensures that **STEMI** patients are treated in a system of coordinated care based upon **STEMI** acuity and the level of intervention and care required for optimal patient outcome.

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

3. Establish a Statewide Stroke Advisory Committee

The Director of MDHHS will appoint a multidisciplinary Stroke Advisory Committee to advise the Bureau on all matters concerning the statewide stroke system and the Regional Stroke Networks.

Leadership and Governance

3. Establish a Statewide **STEMI** Advisory Committee

The Director of MDHHS will appoint a multidisciplinary **STEMI** Advisory Committee to advise the Bureau on all matters concerning the statewide **STEMI** system and the Regional **STEMI** Networks.

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

3. Continued

Establish a Statewide Stroke Advisory Committee

At a minimum, the Committee will be comprised of a neurologist, a stroke coordinator, a stroke data abstractor, an emergency physician, a hospital representative, an EMS agency representative and a medical control authority medical director.

Leadership and Governance

3. Continued

Establish a Statewide **STEMI** Advisory Committee

At a minimum, the Committee will be comprised of a cardiologist, a **STEMI** registered nurse coordinator, a **STEMI** data abstractor/registrar, an emergency physician, a hospital representative, an EMS agency representative and a medical control authority medical director.

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

3. Continued

Establish a Statewide Stroke Advisory Committee

The Stroke Advisory Committee will include representation from each emergency preparedness region. The best interests of the stroke patient will be the primary concern of the committee's advice to the Department.

Leadership and Governance

3. Continued

Establish a Statewide **STEMI** Advisory Committee

The **STEMI** Advisory Committee will include representation from each emergency preparedness region. The best interests of the **STEMI** patient will be the primary concern of the committee's advice to the Department.

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

4. Establish Regional Stroke Networks

The Department will establish eight Regional Stroke Networks that will be assimilated into the existing structure and governance of the current eight Regional Trauma Networks, to provide clinical oversight for the stroke care provided in each respective region of the state.

Leadership and Governance

4. Establish Regional **STEMI** Networks

The Department will establish eight Regional **STEMI** Networks that will be assimilated into the existing structure and governance of the current eight Regional Trauma Networks, to provide clinical oversight for the **STEMI** care provided in each respective region of the state.

Systems of Care for Time Sensitive Emergencies

Leadership and Governance

4. Continued

Establish Regional Stroke Networks

Regional Stroke Networks will be comprised of the approved Medical Control Authorities within the applicable region as defined in the trauma statute and administrative rules. Each Regional Stroke Network will appoint a Regional Stroke Advisory Committee and a Regional Professional Standards Review Organization for Stroke.

Leadership and Governance

4. Continued

Establish Regional **STEMI** Networks

Regional **STEMI** Networks will be comprised of the approved Medical Control Authorities within the applicable region as defined in the trauma statute and administrative rules. Each Regional **STEMI** Network will appoint a Regional **STEMI** Advisory Committee and a Regional Professional Standards Review Organization for **STEMI**.

Systems of Care for Time Sensitive Emergencies

Prehospital

5. Implement Stroke Triage and Destination Prehospital Protocols

Stroke patients requiring the resources of a Stroke Center will be identified by stroke triage protocols established by the Regional Stroke Networks. Triage protocols enable prehospital providers to identify and assess known or suspected patients using validated stroke screening tools approved by the Lead Agency, with the advice of the State Stroke Advisory Committee and the Quality Assurance Task Force.

Prehospital

5. Implement **STEMI** Triage and Destination Prehospital Protocols

STEMI patients requiring the resources of a **STEMI** Center/Facility will be identified by **12 lead ECG, where available**, and cardiac chest pain triage criteria as established by the Regional **STEMI** Networks. Cardiac chest pain triage protocols will ensure that known or suspected **STEMI** patients are identified using **12 lead ECG, where available**, and assessed using protocols that are established and approved by the Lead Agency, with the advice of the **State STEMI Advisory Committee and the Quality Assurance Task Force**.

Systems of Care for Time Sensitive Emergencies

Prehospital

5. Continued

Implement Stroke Triage and Destination Prehospital Protocols

Each Regional Stroke Network will establish destination protocols for transporting stroke patients with the medical control authorities within the respective region. These protocols will ensure that patients are transported to the most appropriate stroke center, and that prehospital EMS notifies the destination stroke center that a stroke patient is enroute.

Prehospital

5. Continued

Implement **STEMI** Triage and Destination Prehospital Protocols

These protocols will ensure that identified STEMI patients are transported to a STEMI Receiving Center, or a STEMI Referring Facility when appropriate, and that prehospital EMS notifies the destination STEMI Receiving Center or STEMI Referring Facility that a STEMI patient is enroute.

Systems of Care for Time Sensitive Emergencies

Prehospital

5. Continued

Implement Stroke Triage and Destination Prehospital Protocols

Stroke triage protocols will enable the prehospital providers to identify those patients who require the resources of a Level I, Level II or Level III Stroke Center, as well as those patients who are appropriately transported to a Level IV Stroke Center for initial assessment and treatment, necessary stabilization and prompt transfer to the appropriate Level I, II or III Stroke Center.

Prehospital

5. Continued

Implement **STEMI** Triage and Destination Prehospital Protocols

Cardiac chest pain triage protocols will enable the STEMI network providers to identify those patients who require the resources of a STEMI Receiving Center, as well as those patients who are appropriately transported to a STEMI Referring Facility for initial assessment and therapy, necessary stabilization and /or prompt transfer to the appropriate STEMI Receiving Center.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Verification of Stroke Centers

In order to be designated by the Department, each participating hospital must submit evidence of current certification, by a nationally recognized and department approved accreditation organization*, that the hospital has the resources to operate at the specific level of stroke care requested in an application for designation from the Department.

Verification and Designation

6. Verification of **STEMI Receiving Centers/STEMI Referring Facilities**

In order to be designated by the Department, each participating hospital must submit evidence of current certification, by a professional nationally recognized and department approved accreditation organization*, that the hospital has the resources to **operate as a STEMI Receiving Center or STEMI Referring Facility.**

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Continued

Verification of Stroke Centers

*Current department approved national accreditation organizations are The Joint Commission (TJC), the Health Care Facilities Accreditation Program (HFAP) or Det Norske Veritas and Germanisher Lloyd (DNV-GL).

Verification and Designation

6. Continued

Verification of **STEMI Receiving Centers/STEMI Referring Facilities**

*Current department approved professional national accreditation organizations are American Heart Association (AHA), The Joint Commission (TJC), or the American College of Cardiology (ACC).

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Continued

Verification of Stroke Centers

The written certification will serve as verification to the Department that the hospital will comply with the standards and resources for the requested level of stroke care designation throughout the current certification period.

Alternately, a hospital may apply to the Department for temporary status as a Stroke Center by submitting an application that includes evidence that the hospital meets the Department approved criteria for a Provisional Stroke Center. A hospital applying for Provisional Stroke Center status will require the recommendation of the Regional Stroke Network and a recommendation for approval from the Stroke Advisory Committee.

Verification and Designation

6. Continued

Verification of **STEMI Receiving Center/STEMI Referring Facilities**

The written certification will serve as verification to the Department that the hospital will comply with the standards and resources for the requested level of **STEMI** designation throughout the current certification period.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Continued

Verification of **STEMI Receiving Centers/STEMI Referring Facilities**

Alternately, a hospital may apply to the Department for temporary status as a Provisional STEMI Receiving Center or STEMI Referring Facility by submitting an application that includes evidence that the hospital meets the Department approved criteria for a Provisional STEMI Receiving Center or Provisional STEMI Referring Facility. A hospital applying for Provisional STEMI Receiving Center or Provisional STEMI Referring Facility status will require the recommendation of the Regional STEMI Network and a recommendation for approval from the STEMI Advisory Committee.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Continued

Verification of Stroke Centers

Hospitals that are unable to maintain the standards and resources for the certified level of stroke care during the certification period will be required to promptly self-report their change of status of non-compliance to the Department and appropriate Regional Stroke Network(s).

Verification and Designation

6. Continued

Verification of **STEMI Receiving Centers/STEMI Referring Facilities**

Hospitals that are unable to maintain the standards and resources for the certified level of **STEMI** care during the certification period will be required to promptly self-report their change of status of non-compliance to the Department and appropriate Regional **STEMI** Network(s).

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Continued

Verification of Stroke Centers

For a **Level I Stroke Center**, evidence of current certification by a Department approved nationally recognized accreditation organization that the hospital has the resources required to be certified as meeting the criteria equivalent for a TJC Comprehensive Stroke Center (CSC), an HFAP Comprehensive Stroke Certification (CSC), or DNV-GL Comprehensive Stroke Center (CSC).

Verification and Designation

6. Continued

Verification of **STEMI Receiving Centers/STEMI Referring Facilities**

For a **STEMI Receiving Center**, evidence of current certification by a Department approved professional nationally recognized accreditation organization that the hospital has the resources required to be certified as meeting the criteria equivalent for **an accredited STEMI Receiving Center**.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Continued

Verification of Stroke Centers

For a **Level II Stroke Center**, evidence of current certification by a Department approved nationally recognized accreditation organization that the hospital has the resources required to be verified as meeting the criteria for a certified TJC Thrombectomy Capable Stroke Center (TSC), an HFAP Thrombectomy Certification, or DNV-GL Primary Plus Stroke Center / Thrombectomy Capable (PSC+). Level II Stroke Centers are specifically required to demonstrate the resources to provide mechanical thrombectomy on a 24 hour per day, 7 days per week, 365 days per year basis.

Verification and Designation

6. Continued

Verification of **STEMI Receiving Centers/STEMI Referring Facilities**

For a **STEMI Referring Facility**, evidence of current certification by a Department approved professional nationally recognized accreditation organization that the hospital has the resources required to be verified as meeting the criteria for an accredited **STEMI Referring Facility**.

Alternatively, hospitals seeking STEMI Referring Facility designation without any cardiac catheterization resources may choose to be verified by the State of Michigan as having the equivalent resources as a department approved professional nationally recognized accreditation organization.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Continued

Verification of Stroke Centers

For a **Level III Stroke Center**, evidence of current certification by a Department approved nationally recognized accreditation organization that the hospital has the resources required to be certified as meeting the criteria for an accredited TJC Primary Stroke Center (PSC), an HFAP Primary Stroke Certification, or a DNV – GL Primary Stroke Center (PSC).

Verification and Designation

6. Continued

Verification of **STEMI** Receiving Centers/**STEMI** Referring Facilities

A Provisional STEMI Receiving Center or a STEMI Referring Facility will be required to submit a continuing compliance report to the Regional STEMI Network and the Department every six months, or until certified by an approved professional nationally recognized accreditation organization.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

6. Continued

Verification of Stroke Centers

For a **Level IV Stroke Center**, evidence of current certification by a Department approved nationally recognized accreditation organization that the hospital has the resources required to be certified as meeting the criteria for a TJC Acute Stroke Ready Hospital (ASRH), an HFAP Stroke Ready Certification, or a DNV-GL Acute Stroke Ready Center (ASR).

A Provisional Stroke Center will be required to submit a continuing compliance report to the Regional Stroke Network and the Department every six months, or until certified by a Department approved nationally recognized accreditation organization.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

7. Time Frame for Verification

A hospital submitting evidence for certification as a Level I through Level IV Stroke Center will submit documentation of current certification as established by a schedule created by the Department.

Verification and Designation

7. Time Frame for Verification

A hospital submitting evidence for certification as a **STEMI Receiving Center or a STEMI Referring Facility** will submit documentation of current certification as established by a schedule created by the Department.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

8. Designation of Stroke Centers

The Department will designate Stroke Center capability based on the Department's established verification process and the recommendation and advice of the State Stroke Advisory Committee. The Department will maintain a list of all currently designated Stroke Centers including their respective location and designation status.

Verification and Designation

8. Designation of **STEMI** Receiving Centers/ **STEMI** Referring Facilities

The Department will designate **STEMI** Receiving Center or **STEMI** Referring Facility capability based on the Department's established verification process and the recommendation and advice of the State **STEMI** Advisory Committee. The Department will maintain a list of all currently designated **STEMI** Receiving Centers and **STEMI** Referring Facilities including their respective location and designation status.

Systems of Care for Time Sensitive Emergencies

Verification and Designation

9. Periodic Re-designation of Stroke Centers

The Department will establish a mechanism for the re-designation of Stroke Centers based upon the verification time frame established in Recommendation.

Verification and Designation

9. Periodic Re-designation of **STEMI** Receiving Centers/**STEMI** Referring Facilities

The Department will establish a mechanism for the re-designation of **STEMI** Receiving Centers and **STEMI** Referring Facilities based upon the verification time frame established in Recommendation.

Systems of Care for Time Sensitive Emergencies

Data Collection, Performance Improvement and Education

10. Data Collection and Confidentiality

All designated Stroke Centers that receive stroke patients are required to participate in the stroke data collection process established by the Department. Failure to comply with the stroke data collection process may result in revocation of the hospital's designation.

Protection of stroke patient data collected for Regional Stroke Network performance improvement will be provided and maintained through existing state legislation included in the Public Health Code.

Data Collection, Performance Improvement and Education

10. Data Collection and Confidentiality

All designated **STEMI** Receiving Centers/**STEMI** Referring Facilities that receive **STEMI** patients are required to participate in the **STEMI** data collection process established by the Department. Failure to comply with the **STEMI** data collection process may result in revocation of the hospital's designation.

Protection of **STEMI** patient data collected for Regional **STEMI** Network performance improvement will be provided and maintained through existing state legislation included in the Public Health Code.

Systems of Care for Time Sensitive Emergencies

Data Collection, Performance Improvement and Education

11. Data Collection System

A statewide stroke data registry will be established by the Department, including the establishment of a stroke data dictionary, and the stroke data upload and stroke data verification process.

The submission of stroke data to the stroke registry will be phased-in in order to support the efficient and orderly establishment of designated stroke centers.

Data Collection, Performance Improvement and Education

11. Data Collection System

A statewide **STEMI** data registry will be established by the Department, including the establishment of a **STEMI** data dictionary, and the **STEMI** data upload and **STEMI** data verification process.

The submission of **STEMI** data to the **STEMI** registry will be phased-in in order to support the efficient and orderly establishment of designated **STEMI** Receiving Centers/**STEMI** Referring Facilities.

Systems of Care for Time Sensitive Emergencies

Data Collection, Performance Improvement and Education

11. Continued

Data Collection System

Stroke Centers will submit the required stroke data quarterly to the stroke data registry according to a schedule established by the Department. The stroke data registry will utilize a standardized data set recommended by the State Stroke Advisory Committee and approved by the Department.

Data Collection, Performance Improvement and Education

11. Continued

Data Collection System

STEMI Receiving Centers/**STEMI** Referring Facilities will submit the required **STEMI** data quarterly to the **STEMI** data registry according to a schedule established by the Department. The **STEMI** data registry will utilize a standardized data set recommended by the State **STEMI** Advisory Committee and approved by the Department.

Systems of care for Time Sensitive Emergencies

Data Collection, Performance Improvement and Education

11. Continued

Data Collection System

The stroke data set will be uploaded to the state stroke data registry by each Stroke Center. The Department will facilitate direct entry of stroke data into the state stroke data registry at no cost to a hospital.

Additional stroke data elements, not a part of the standardized stroke data set, may be required based upon the recommendation of the Stroke Advisory Committee and approved by the Department.

Data Collection, Performance Improvement and Education

11. Continued

Data Collection System

The **STEMI** data set will be uploaded to the state **STEMI** data registry by each **STEMI** Receiving Center/**STEMI** Referring Facility. The Department will facilitate direct entry of **STEMI** data into the state **STEMI** data registry at no cost to a hospital.

Additional **STEMI** data elements, not a part of the standardized **STEMI** data set, may be required based upon the recommendation of the **STEMI** Advisory Committee and approved by the Department to support system assessment performance evaluation.

Systems of Care for Time Sensitive Emergencies

Data Collection, Performance Improvement and Education

12. Stroke Care Performance Improvement

Each medical control authority will adopt and implement regional stroke triage and destination protocols, and a performance improvement plan as developed by the Regional Stroke Network and approved by the Department. Performance improvement will be supported by the Bureau of Health and Wellness and the Bureau of Epidemiology and Population Health.

Data Collection, Performance Improvement and Education

12. **STEMI** Care Performance Improvement

Each medical control authority will adopt and implement regional **STEMI** triage and destination protocols, and a performance improvement plan as developed by the Regional **STEMI** Network and approved by the Department. Performance improvement will be supported by the Bureau of Health and Wellness and the Bureau of Epidemiology and Population Health.

Systems of Care for Time Sensitive Emergencies

Data Collection, Performance Improvement and Education

13. Stroke Awareness, Prevention and Education

The Department, with the advice of the Stroke Advisory Committee, will support coordination among state and regional stroke awareness initiatives and programs. The Department will work with stroke care stakeholders throughout the state to support ongoing stroke care provider and community education efforts.

Data Collection, Performance Improvement and Education

13. **STEMI** Awareness, Prevention and Education

The Department, with the advice of the **STEMI** Advisory Committee, will support coordination among state and regional **STEMI** awareness initiatives and programs. The Department will work with **STEMI** care stakeholders throughout the state to support ongoing **STEMI** care provider and community education efforts.

Next Steps



The recommendations are posted for review at:

www.Michigan.gov/traumasystem



Disseminating the Recommendations to the broader group of stakeholders



Legislation and Administrative Rule process

Contact information:

AARON BROWN

SYSTEMS OF CARE COORDINATOR

BROWNA68@MICHIGAN.GOV

EILEEN WORDEN

STATE TRAUMA MANAGER

WORDENE@MICHIGAN.GOV