

Title 15: Mississippi State Department of Health

Part 3: Bureau of Acute Care Systems

Subpart 2: STEMI System of Care

Chapter 1 Mississippi STEMI System of Care

Subchapter 1 General

Source: Miss. Code Ann. § 41-3-15

Rule 1.1.1. Legal Authority: The Mississippi State Department of Health (Department) is assigned the responsibility for developing, implementing and managing the statewide STEMI System of Care (SOC). The Department shall be designated as the lead agency for STEMI SOC development, implementation and management. The Department shall develop and implement the Mississippi STEMI SOC Plan and STEMI SOC standards, which include but are not limited to those having to do with STEMI center designation, field triage of STEMI patients, inter-facility transfer of STEMI patients, STEMI care from initial medical contact through appropriate intervention, STEMI data collection, STEMI system evaluation and management of STEMI funding. The Department shall further promulgate specific regulations regarding the methods and procedures by which Mississippi-licensed acute care facilities shall participate in the statewide STEMI SOC. These specific regulations shall include mechanisms for determining the appropriate level of participation for each facility or class of facilities. The Department shall cause the implementation of professional and lay STEMI education programs including but not limited to STEMI education, CPR training and cardiac disease prevention programs.

Source: Miss. Code Ann. § 41-3-15

Rule 1.1.2. Mississippi STEMI SOC Advisory Committee: The Mississippi STEMI SOC Advisory Committee is created for the purpose of serving as an advisory body for statewide STEMI SOC development and shall provide support to the Department in all areas of STEMI SOC design, including the development and updating of SOC standards, SOC data collection and evaluation, SOC performance improvement, SOC funding, and evaluation of SOC programs.

Source: Miss. Code Ann. § 41-3-15

Rule 1.1.3. Members of the STEMI Advisory committee will be appointed by the State Health Officer for a term of three years and shall include representatives from the following entities:

- a. Cardiologist Co-chair
- b. Emergency Medicine Co-Chair

- c. Emergency Medicine Representatives from the Northern, Central and Southern Regions
- d. Emergency Nursing Representatives from the Northern, Central and Southern Regions
- e. Hospital Administration Representatives from the Northern, Central and Southern Regions
- f. Cardiology Representatives from the Northern, Central and Southern Regions
- g. STEMI Nursing Representatives from the Northern, Central and Southern Regions
- h. Registry Representatives from the Northern, Central and Southern Regions
- i. EMS Provider Representatives from the Northern, Central and Southern Regions
- j. EMS Administration Representatives from the Northern, Central and Southern Regions
- k. Regional STEMI Coordinators from the Northern, Central and Southern Regions
- l. American Heart Association Representative
- m. Cardiac Surgeon

Source: Miss. Code Ann. § 41-3-15

Rule 1.1.4. The Mississippi STEMI SOC Advisory Committee shall meet at least quarterly.

Source: Miss. Code Ann. § 41-3-15

Rule 1.1.5. **Definitions:** For the purpose of clarity and usage in the Mississippi STEMI SOC, the following abbreviations, acronyms, and terms shall be defined as follows:

- 1. ACC - American College of Cardiology
- 2. ACLS - Advanced Cardiac Life Support
- 3. ALS - Advanced life support, including techniques of resuscitation, such as, intravenous access, and cardiac monitoring
- 4. BACS – Bureau of Acute Care Systems, Mississippi State Department of Health
- 5. BEMS – Bureau of Emergency Medical Services, Mississippi State Department of Health
- 6. BLS - Basic life support techniques of resuscitation, including simple airway maneuvers, administration of oxygen, and intravenous access
- 7. CAP – Corrective Action Plan

8. CCRN - Critical Care Registered Nurse.
9. CEN - Certified Emergency Nurse
10. Department - Mississippi State Department of Health
11. Designation - Formal recognition of hospitals by the Department as providers of specialized STEMI services to meet the needs of patients suffering from an acute STEMI
12. E&D – Essential and Desirables chart for each STEMI Center designation level
13. Emergency Department (or Emergency Room) - The area of an acute care hospital that customarily receives patients in need of emergency medical evaluation and/or care
14. EMS - Emergency Medical Services
15. EMSAC – Emergency Medical Services Advisory Council
16. ENA - Emergency Nurses Association
17. Field Triage - Classification of patients according to medical need at the scene of an injury or onset of an illness
18. Inclusive STEMI System of Care - a STEMI care system that incorporates every health care facility willing to participate in the voluntary system in order to provide a continuum of services for all patients suffering from an acute STEMI; the patient's needs are matched to the appropriate hospital resources
19. STEMI Receiving Centers - A hospital with the ability to provide 24/7/365 percutaneous coronary intervention (PCI) and provide leadership and complete care for every aspect of STEMI from prevention to rehabilitation
20. STEMI Referral Centers - An acute care hospital with the commitment, resources and specialty training necessary to diagnose, provide initial care and administer thrombolytics 24/7/365
21. Medical Control - Physician direction over pre-hospital activities to ensure efficient field triage, transportation, and care of STEMI patients
22. Mid-level Providers/Practitioners – Physician Assistant (PA) and/or Nurse Practitioners (NP)

23. Mississippi STEMI System of Care Plan - A formally organized plan developed by the Department, which sets out a comprehensive system for the prevention and management of STEMI patients
24. Non-Designated Hospital - A licensed acute care hospital that has applied for designation as a STEMI center, but has not been designated by the Department
25. Non-Participating Hospital – A licensed acute care hospital that has informed the Department that they do not desire to participate in the STEMI SOC
26. Performance Improvement (PI or Quality Improvement) - A method of evaluating and improving processes of patient care which emphasizes a multi-disciplinary approach to problem solving, and focuses not on individuals, but systems of patient care which might cause variations in patient outcome
27. Research - Clinical or laboratory studies designed to produce new knowledge applicable to the care of STEMI patients
28. Service Area (or "catchment area") - Geographic area defined by the local EMS agency as the area served by a designated STEMI Center
29. SHO – State Health Officer
30. STEMI Registry - a database program managed by the Department and used by hospitals to track STEMI patients and the care of STEMI patients
31. Triage - the process of sorting patients on the basis of the actual or perceived injury or illness and assigning them to the most effective and efficient STEMI care resources, in order to insure optimal care and the best chance of survival

Subchapter 2 Designation of STEMI Centers

Source: Miss. Code Ann. § 41-3-15

- Rule 1.2.1. Application for STEMI Center Designation
- a. The decision to participate in the STEMI SOC is made jointly by the hospital administration and the medical staff and must be documented in an official letter of application for designation
 - b. The Letter of Application should verify that the resolution to participate has been passed by the appropriate quorum of the governing authority of the hospital and co-signed by the director of the medical staff and contain the commitment to adhere to state STEMI System of Care protocols
 - c. Each STEMI hospital must have an emergency physician and cardiologist (co-directors) responsible for oversight of the STEMI program
 - d. STEMI program co-directors are responsible for developing and maintaining basic STEMI care protocols for the hospital

- e. STEMI program co-directors also have oversight responsibility for the STEMI component of the hospital PI program

Source: Miss. Code Ann. § 41-3-15

Rule 1.2.2. Application Process for Initial STEMI Center designation

- a. The participation of acute care facilities in the STEMI SOC is voluntary; however, participating hospitals must be appropriately designated according to ability to care for STEMI patients – designation is a process of verifying that appropriate staff and resources are available
- b. To receive initial designation as a STEMI center the applicant hospital shall submit a letter of application to the Department
 - a. If currently designated as a STEMI receiving center by the American Heart Association, or another nationally recognized accrediting organization, and standards meet or exceed the regulations of this chapter, reciprocity shall be granted
- c. Within 60 days of receipt of the letter of application, the Department shall:
 - a. acknowledge receipt of the letter of application
 - b. provide the status of the application (accepted or rejected)
- d. If the application is accepted, the Department shall:
 - a. work with hospital staff to schedule the date for the designation survey visit
 - b. provide materials to hospital staff for preparing for the designation survey visit
- e. If the application is rejected, the Department shall:
 - a. provide reasons for rejection
 - b. require documentation of corrective actions before accepting subsequent letters of application for designation from the applicant hospital
- f. The Department will provide results of the designation survey and any proposed CAP to the Mississippi STEMI SOC Advisory Committee
- g. The Mississippi STEMI SOC Advisory Committee will make a recommendation for designation to the State Health Officer
- h. The Department will inform the applicant hospital of the status of the application within 14 days of the advisory committee meeting

Source: Miss. Code Ann. § 41-3-15

Rule 1.2.3. Term of STEMI Center Designations:

- a. The department shall designate STEMI Centers for a period not to exceed three (3) years. Designations shall remain active for three years provided no substantive changes or variances have occurred. The Department (and may perform periodic STEMI center audit/reviews. The State Health Officer (SHO) may extend STEMI Center designations for one (1) year.

Source: Miss. Code Ann. § 41-3-15

- Rule 1.2.4. Continuing Designation: Designated STEMI centers wishing to maintain current designation status shall submit a letter of intent to continue as currently designated no less than 30 days prior to the expiration of designation status.
- a. Any designated hospital not submitting a letter of intent to continue as currently designated will be required to reapply through the initial application process
 - b. Any Designated STEMI center that loses, either permanently or temporarily, patient care specialties required by this regulation, shall report that loss to the Department
 - c. If the loss will result in the hospital's inability to carry out the patient care activities associated with the current level of designation for a period longer than 30 days, the facility must submit a Corrective Action Plan (CAP) that addresses how and when the facility will become compliant

Source: Miss. Code Ann. § 41-3-15

- Rule 1.2.5. Suspension of STEMI Center Designation: The State Health Officer may suspend the STEMI center designation of any hospital for:
- a. Documented conditions of serious threat or jeopardy to patients' health or welfare
 - b. Failure to comply with laws or regulations
 - c. Failure to satisfactorily complete the minimum requirements as a STEMI center as defined by the regulations for the designation level
 - d. Failure to complete a Corrective Action Plan (CAP) within the timeframe specified by the Department
 - e. Hospitals having their Designation status suspended may reapply for designation after resolution of all issues related to the suspension, and completion and new application and designation survey visit

Source: Miss. Code Ann. § 41-3-15

- Rule 1.2.6. Change of STEMI Center Designation: STEMI Centers will be permitted to change their designation if the following conditions are met in their entirety:
- a. The STEMI Center has been appropriately surveyed and designated by the Department, the designation is current, and the STEMI Center is in full compliance with Department, regulations, policies, procedures, and protocols
 - b. The request to change designation has been approved by Mississippi STEMI Advisory Council
 - c. The State Health Officer (SHO) or designee issues the new designation

Subchapter 3 Financial Support for the STEMI SOC

Source: Miss. Code Ann. § 41-3-15

Rule 1.3.1. The Mississippi State Department of Health is authorized to contract with the Mississippi Healthcare Alliance for services in the STEMI SOC. Services include but are not limited to cardiac disease education and prevention initiatives, public awareness initiatives designed for the purpose of making the public aware of the public health concern associated with cardiac disease, regional and STEMI center training in use of the STEMI registry, maintenance of the website providing lists and maps of currently designated STEMI centers, education activities of STEMI patient care providers, including EMS, ER and STEMI center personnel, CPR training and the dissemination of literature for use by STEMI providers. When funds are used in public awareness campaigns and STEMI programs, it should be noted that the Mississippi State Department of Health is the state agency assigned the responsibility for developing, implementing and managing the STEMI System of Care (SOC).

Source: Miss. Code Ann. § 41-3-15

Rule 1.3.2. STEMI Center Funding: There are no assigned annual fund distributions for STEMI centers.

Subchapter 4 Mississippi State STEMI Registry

Source: Miss. Code Ann. § 41-3-15

Rule 1.4.1. STEMI Data Collection and Use

- a. Participants in the statewide STEMI SOC will utilize a department approved national registry platform to collect data on STEMI patients and identify system issues, such as over and under triage
- b. All designated STEMI centers shall enter data on all STEMI patients
- c. Data collection will begin with systems and field data and continue through patient discharge/autopsy

Subchapter 5 STEMI Receiving Center Standards

Source: Miss. Code Ann. § 41-3-15

Rule 1.5.1. During the Initial Application for Designation Process and for re-designation STEMI Receiving Centers shall verify the following resources:

- a. Hospital Organization
 - i. STEMI service line or equivalent
 - ii. STEMI Care Coordinator or Service Line Director

iii. Departments/Sections

- Interventional/Non-Interventional Cardiology
- Cardiac Catheterization Laboratory
- Emergency Department
- Coronary Care Unit
- Cardiovascular Surgery on-site or transfer protocols in place

iv. STEMI Treatment Protocols

- Protocols for triage, diagnosis (ECG < 10 minutes), and Cardiac Catheterization Laboratory activation
- A single activation telephone call should alert the STEMI team

b. Clinical Capabilities

i. Specialty availability (contact made with patient and care plan determined):

- Emergency Medicine – 10 minutes (ECG < 10 minutes)
- Interventional Cardiology – 30 minutes after notification by Emergency Department, or in accordance with hospital STEMI plan
- Cardiac Catheterization Lab – 30 minutes after activation

c. Consultant availability (on-call in accordance with hospital STEMI Plan):

- Cardiovascular Surgery
- Pulmonary/Critical Care
- Radiology
- Internal Medicine/Hospital Care Services

d. Facilities and Resources

- Emergency Department

- Personnel
 - Designated Physician Director
 - Emergency Medicine Specialists
 - Nursing personnel with expertise (ACLS/ECG interpretation/cardiac arrhythmia monitoring/cardiac drugs) to monitor patient until admission to a hospital unit or transfer
- Equipment
 - Airway control and ventilation equipment
Oxygen/Pulse oximetry
 - End-tidal CO2 determination
 - Suction devices
 - 12-lead ECG capability
 - Ability to obtain/interpret cardiac bio-markers
 - Intravenous fluid administration equipment
 - Sterile vascular (venous and arterial) access sets
 - Gastric decompression equipment
 - ACLS drugs
 - Cardiac rhythm monitoring capability
 - Bi-phasic cardiac defibrillator equipment
 - Emergency temporary pacemaker capabilities (transthoracic/transvenous)
 - Intubation/emergency airway management equipment
 - Two-way communication capability with EMS

ii. Coronary/Intensive Care Unit

- Personnel
 - Designated Medical Director

- Critical Care/Pulmonary Medicine/Intensivist (in-house or immediately [< 30 minutes] available)
- Equipment: Appropriate cardiac monitoring and respiratory support equipment

iii. Cardiac Catheterization Laboratory

- Personnel
 - Radiologic staff with experience in cath lab operations and all aspects of diagnostic and interventional PCI
 - Nursing staff experienced in cath lab operations, conscious sedation, cardiac monitoring, and cardiac emergencies
- Equipment
 - Guiding catheters, a variety of coronary guidewires, a variety of coronary stents
 - Advanced hemodynamic and ECG monitoring
 - Bi-phasic cardiac defibrillator equipment
 - Intravenous anti-thrombin and anti-platelet drugs
 - Intravenous vasoactive / vasopressor medications
 - Intravenous anti-arrhythmic medications
 - Distal protection devices
 - Aspiration thrombectomy catheters
 - Devices for acute hemodynamic support (i.e., IABP, Impella)
 - Temporary transvenous pacemaker
 - Intubation/emergency airway management equipment

iv. Rehabilitation

- Protocol for cardiac patients
- Full in-house service or transfer agreement with cardiac rehabilitation facility

v. Laboratory Services

- Standard analyses of blood, urine, etc.
- Blood typing and cross-matching
- Comprehensive blood bank or access to equivalent facility
- Blood gases and pH determinations
- Comprehensive coagulation testing
- Cardiac bio-marker testing

vi. Continuing Education: Formal programs on Acute Coronary Syndrome-STEMI for:

- Staff physicians (Cardiology/Emergency Medicine/Primary Care)
- Nursing (Cardiac Cath Lab/ED/CCU)
- Allied health personnel (Respiratory Therapy/ED technicians)
- Community physicians
- EMS

Source: Miss. Code Ann. § 41-3-15

Rule 1.5.2. During the Initial Application for Designation Process and for re-designation STEMI non-PCI Centers shall verify the following resources

a. Hospital Organization

i. Departments/Sections

- Emergency Department

- STEMI treatment protocols
 - Each ED should maintain a standardized reperfusion STEMI care pathway that designates primary PCI as the preferred strategy if transfer to a primary PCI Center can be achieved within ACC/AHA guidelines
 - Each ED should maintain a standardized STEMI care pathway that designates fibrinolysis in the ED (for eligible patients) when transfer to a primary PCI Center within ACC/AHA guidelines cannot be achieved
 - If reperfusion strategy is for transfer to a primary PCI Center, patients should be transported to the most appropriate PCI Center where the first door-to-balloon time is < 120 minutes

b. Clinical Capabilities

- i. Specialty availability (contact made with patient and care plan determined):
 - Emergency Medicine – ECG < 10 minutes

c. Facilities and Resources

i. Emergency Department

- Personnel
 - Designated Physician Director
 - Emergency Medicine Specialists (including mid-level practitioners)
 - Nursing personnel with expertise (ACLS/ECG interpretation/cardiac arrhythmia monitoring/cardiac drugs) to monitor patient until admission to a hospital unit or transfer
- Equipment
 - Airway control and ventilation equipment

- Oxygen/Pulse oximetry
 - End-tidal CO2 determination
 - Suction devices
 - 12-lead ECG capability
 - Intravenous fluid administration equipment
 - Gastric decompression equipment
 - ACLS drugs
 - Cardiac rhythm monitoring capability
 - Bi-phasic cardiac defibrillator equipment
 - Intubation/emergency airway management equipment
 - Two-way communication capability with EMS
- d. Continuing Education: Formal programs on Acute Coronary Syndrome-STEMI for:
- i. ED physicians/mid-level practitioners
 - ii. Nurses
 - iii. Allied health personnel
 - iv. Community physicians
 - v. EMS

Subchapter 6 Pre-hospital Component and Field Triage

Source: Miss. Code Ann. § 41-3-15

Rule 1.6.1. The STEMI triage and transfer guidelines are based on the concept of getting the right patient to the right hospital in the shortest period of time. In order to do this some hospitals may be completely bypassed in favor of a more distant but more medically capable hospital. This rule provides a sample EMS Field Destination Guideline [see Appendix A].

Source: Miss. Code Ann. § 41-3-15

Rule 1.6.2. EMS providers shall utilize the same 10 minute recommendation for acquiring the 12-lead ECG and transmit the ECG prior to arrival at the STEMI Center

Source: Miss. Code Ann. § 41-3-15

Rule 1.6.3. If first medical contact to device can be anticipated by EMS to be achieved in 90 minutes or less, patient should be transferred directly to the STEMI Receiving Center, by-passing facilities not capable of providing PCI.

Subchapter 7 Inter-facility Transfers of STEMI Patients

Source: Miss. Code Ann. § 41-3-15

Rule 1.7.1. Inter-facility Transfers

1. Patients may be transferred from STEMI Referral Center to a STEMI Receiving Center and/or specialty referral centers provided that any such transfer is medically prudent, as determined by the transferring STEMI Center physician of record, and is conducted by the appropriate level of emergency medical service provider
2. STEMI Referral Center shall develop written criteria for consultation and transfer of patients needing a higher/specialty level of care
3. STEMI Receiving Center shall provide written feedback to the STEMI Referral Center and shall participate in the state performance improvement process.

Subchapter 8 Performance Improvement and System Evaluation

Source: Miss. Code Ann. § 41-3-15

Rule 1.8.1. Performance Improvement shall be an essential part of the STEMI SOC. It shall be used to analyze proper functioning of the system and implement improvements in system operation. The PI program will be system-wide. Every designated STEMI center is required to participate in the system PI process. The appropriateness and quantity of all activities of the STEMI system must be continuously evaluated.

- a. The STEMI PI committee of shall be responsible for the PI oversight of the STEMI System. Members of the STEMI PI committee will be appointed by the State Health Officer for a term of three years and shall include representatives from the following entities:
 - i. One Interventional Cardiologist practicing PCI from each of the three regions
 - ii. One Emergency Medicine physician practicing at a STEMI Receiving Center from each of the three regions

- iii. The State EMS Medical Director or his physician designee
- iv. The STEMI PI will be co-chaired by a cardiology physician and an emergency medicine physician of the committee as determined annually by a majority of the committee

Source: Miss. Code Ann. § 41-3-15

Rule 1.8.2. Specific audit filters will be established by the STEMI PI committee

- a. In general, the following performance improvement processes should be performed by each STEMI center. The results of these reviews shall be reported to the STEMI PI committee.
 - i. Each STEMI center assigns a PI person to oversee the process
 - ii. Standards established
 - iii. Determine audit filters
 - iv. Collect data
 - v. Evaluate data
 - vi. Determine PI issues present
 - vii. Develop corrective action plan (CAP)
 - viii. Re-evaluate to document results/effectiveness of CAP
- b. The following performance elements should be considered by each pre-hospital entity:
 - i. Accuracy of patient assessment and 12-lead ECG interpretation
 - ii. Protocol adherence
 - iii. Procedures initiated/completed
 - iv. Medical control interaction
 - v. Transport mode (air/ground)
 - vi. Record/documentation
 - vii. Inter-facility care/transport
- c. The following performance elements should be considered by each STEMI center:

- i. Outcome review
- ii. Complications
- iii. Deaths
- iv. Achievement of time sensitive goals, i.e., door-to-balloon time
- v. Adherence to designation level criteria

Source: Miss. Code Ann. § 41-3-15

Rule 1.8.3. Data will be reviewed and analyzed at no less than two separate levels. Primary patient care data will be reviewed at each facility by its Multidisciplinary Committee. These committees will utilize nationally accepted patient review criteria and will also review the pre-hospital care of STEMI patients. The final level of data review will take place at the state level. Statewide data will be used for the review of statewide criteria and epidemiological purposes. The Statewide Education/Prevention program will be based on this data.

EMS Triage and Destination Guidelines STEMI

The purpose of this guideline is to:

- quickly identify and deliver the STEMI patient to the appropriate STEMI Receiving or Referral Center

CHEST PAIN AND STEMI

- Chest pain longer than 15 minutes and less than 12 hours
(and)
- 12-Lead ECG shows ST segment elevation in 2 contiguous leads
(OR) LBBB not known to be present for this patient

Anticipated EMS arrival at a STEMI Receiving Facility within <90 Minutes using ground or air medical transport

-NO-

Transport the patient to the closest STEMI Referral Center for appropriate stabilization and care

-YES-

Transport the patient to the closest STEMI Receiving Facility

- Consider the use of air medical transport if available*