

Center *for* Mississippi  
Health Policy

**MISSISSIPPI  
TRAUMA CARE  
SYSTEM**

**LIFE SAVING CARE IS NO ACCIDENT**

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## ■ Executive Summary

The State of Mississippi has been building a formal statewide trauma system for over fifteen years. In recent years, barriers to progress have resulted in less than optimal trauma care statewide. A formalized system of trauma care helps injured patients receive specialized treatment at the closest capable facility. This type of system has been shown to reduce mortality. Further development of the trauma care system in Mississippi will be difficult unless existing barriers are addressed. This paper outlines the history of the trauma system in Mississippi, highlights its strengths and weaknesses, and discusses policy options for consideration by state policymakers.

In 1991, the Mississippi Legislature charged the Department of Health with the responsibility for oversight of trauma system development. A trauma registry was established the following year. In 1997, the Legislature created the Trauma Care Task Force, an ad hoc seventeen-member group, to plan the development of a formal trauma system. The Task Force presented its recommendations to the Governor and the Legislature at the end of the same year.

Legislation was enacted during 1998 to implement many recommendations of the Trauma Care Task Force. The new statute defined key components of the system, charged the Bureau of Emergency Medical Services at the Mississippi Department of Health with leading the development of a statewide trauma care system, authorized the creation of the Mississippi Trauma Advisory Committee (MTAC) as a permanent advisory body to recommend changes in the state's trauma plan, and established the Trauma Care System Fund. The legislation also authorized an assessment of \$5 on all moving traffic violations to generate revenue for the Fund. In 1999, the Legislature began appropriating \$6 million annually from the Health Care Expendable Fund to the Trauma Care System Fund, and in 2005, increased the assessment on moving traffic violations to \$10.

In 2002, the Mississippi Trauma Advisory Committee's recommended revisions to the state's trauma plan were approved by the State Board of Health leading to the development of seven trauma regions. The regulations adopted by the Board designated hospitals as Level I, II, III, or IV trauma centers and required hospitals seeking to become formal trauma centers to pass inspection, with Level I being the most comprehensive trauma care and Level IV being the lowest designation. All trauma regions were mandated to collect trauma registry data from these hospitals and report data to the Mississippi Department of Health.

Funds in the Trauma Care System Fund are used for administration of the system, including the collection and reporting of data and the administrative structure of trauma regions, and for uncompensated trauma care. Seventy percent (70%) of the uncompensated care fund is allocated to eligible hospitals and thirty percent (30%) to certain physician specialists not otherwise compensated for their trauma services. In 2005, approximately 285 trauma system physicians received an average reimbursement of \$7,258.43 each for all uncompensated trauma care provided that year. Eleven trauma hospitals submitted \$100 million worth of gross charges for 4,995 uncompensated care patients and were awarded \$4.8 million. Trauma centers, therefore, do receive financial compensation from the Trauma Care System Fund for participating in the system, but at a fraction of the cost.

During 2005, the Mississippi Firefighters Burn Center in Greenville, the only special center for treating burn victims in the state, closed due to inability to recruit burn specialist surgeons and inadequate funding. The Burn Center had been supported by several legislative mechanisms for over twenty years. Funds remaining in the Mississippi Firefighters Memorial Burn Center Fund (approximately \$2 - \$3 million) were transferred to the newly created Mississippi Burn Care Fund administered by the Mississippi Department of Health to reimburse other states for providing services to Mississippi burn victims unable to pay. The closure of the state's only burn center highlighted the major problems plaguing all trauma care in the state: recruitment and retention of specialized medical personnel and a high proportion of uncompensated care.

The growth of Mississippi's trauma system has stalled in recent years, and the structures built over the past fifteen years are vulnerable to deterioration. Mississippi has developed four of the nine characteristics of a "mature" trauma system and needs renewed effort to move forward.

Current strengths of the system include the following:

- A formal trauma system structure is authorized in law.
- The State has the authority to designate hospitals as trauma centers.
- Rules are in place guiding trauma center designation standards.
- Trauma regions have been formed to coordinate local trauma centers and aid Mississippi Department of Health in dispersing funds as well as collect trauma registry data.
- A trauma registry exists as a data repository.
- Legislative commitment to funding trauma care is evident.
- There is a centrally located Level I trauma center willing and able to care for complex trauma cases.

Weaknesses in Mississippi's trauma system include the following:

- At the time of this report, the Mississippi Trauma Advisory Committee (MTAC) had not met for over a year.
- Three trauma regions do not include a Level I or Level II trauma center, and two do not have at least a Level III center, leaving some rural areas lacking proximity to proper trauma care.
- The performance of the seven trauma regions varies significantly.
- Funding for trauma regions is not tied to performance.
- The trauma system is not well integrated with disaster preparedness funding or training.
- Not all hospitals participate in the system nor submit data to the trauma registry, although they may treat trauma patients.
- Trauma registry data are not currently used systematically for planning, quality improvement, or evaluation.
- Trauma registry data are not coordinated with Emergency Medical Services data.
- Mississippi has the lowest number of board certified emergency physicians per annual emergency room visit among all states, and a severe shortage of trauma specialists exists in most areas across the state.
- Current funding for uncompensated trauma care covers only a fraction of the cost.

There are several policy options for consideration by state policymakers. The Mississippi Trauma Advisory Committee (MTAC) must be reactivated and supported or another body given the authority to plan and implement the state's trauma system. An ad hoc Trauma Care Task Force similar to the one created in 1997 could be used to revitalize trauma system planning until the MTAC can be reconstituted as a permanent advisory body. The Task Force should work on updating the state's trauma plan and recommending legislation where needed to address system weaknesses.

Policy actions to consider for strengthening the Mississippi trauma care system include the following:

Structure:

- Modify the statute to allow Trauma Care Advisory Council members whose terms have expired to continue to serve until new appointments are made.
- Re-evaluate the regional structure, reviewing successful organizational arrangements in other states.
- If a regional structure is retained, reorganize the trauma regions so that each region includes at least one Level I or II trauma center and redistribute regional funds accordingly.
- Encourage hospitals to participate in the trauma system at levels commensurate with their capacity, possibly through financial incentives or licensing mechanisms.

Administration and financing:

- Develop minimum standards for all trauma regions and implement a system for monitoring and evaluating their performance.
- Integrate the trauma system with bioterrorism preparedness planning and funding.
- Monitor the expenditures from the Mississippi Burn Care Fund and if out-of-state providers do not apply for burn care reimbursement, consider incorporating the monies into the Mississippi Trauma Care System Fund.
- Consider proposing legislation to generate more revenue for the Trauma Care System Fund.
- Review the adequacy of the formulas used to distribute Trauma Care System Fund dollars, including the proportions allocated to state and regional administration, to Level IV trauma centers, and to hospitals and physicians for uncompensated care.

Data collection and reporting:

- Mandate or contractually obligate all hospital emergency rooms caring for trauma patients to submit trauma registry data.
- Improve analytical capabilities of the trauma registry data system and provide reports to trauma regions and participating providers.
- Work with individual trauma centers to measure and improve accountability based on data.
- Provide regular reports on the performance of trauma regions to the State Board of Health using trauma system data.
- Link pre-hospital EMS database to trauma registry data for a comprehensive overview of trauma care.

Provider recruitment and retention:

- Research best practices in recruiting and retaining trauma physicians, nurses, and trauma support staff and implement promising practices.
- Increase trauma educational opportunities for physicians, nurses, and support staff.

Transfers:

- Ensure coordination of critical Emergency Medical System (EMS) pre-hospital compliance and communications regarding trauma patient transfers.
- Standardize inter-hospital transfer arrangements, develop specific policies regarding patients to transfer, and monitor emergency department compliance.
- Use transfer protocols to reduce unnecessary transfers from lower level trauma centers.
- Ensure transfer of patients in an equitable manner to avoid “dumping” of unwanted patients.

## ■ History of Mississippi Trauma Care System Development

A formalized system of trauma care helps injured patients to receive specialized treatment at the closest capable facility. This type of system has been shown to reduce mortality, which is important since traumatic injuries are the leading cause of death for people under 45 years of age (Mississippi Department of Health, 2004).

Trauma care as a coordinated system evolved from the triaging of injured soldiers during wars as early as the 1700s (Davis, 1996). Civilian trauma medicine stems from the results of United States military campaigns in the twentieth century. During World War I, soldiers with the most critical injuries were identified to receive more expedient, specialized care, while those with less critical injuries were sent to another location capable of handling their level of care. Increasing use of motorized ambulances reduced the time to treatment for the wounded in World War II. It was noted that more soldiers survived critical injuries when taken quickly to a unit equipped to handle their complex care. This method was transferred for use with the civilian population during the 1950s. During the Korean War, helicopters and radio communications were utilized to transport the injured to the most appropriate location for care. The Vietnam War marked the beginning of organized field care, which set the stage in civilian medicine for the training and use of paramedics (Trunkey, 2000). The concepts for modern day trauma care were thus born.

The idea of developing specialized emergency care for the civilian population flourished during the 1970's in the United States. Mississippi was no exception. Enactment in 1974 of the Emergency Medical Services (EMS) Act established an EMS program in the Mississippi Department of Health and an EMS Advisory Council whose members are appointed by the Governor. The new program director and key health care providers in the state started to see the need for an organized trauma care system in Mississippi. These pioneers began building the foundation for such a system, working with policy makers, health care providers, and colleagues. The seed was planted for the formation of a planned trauma system (Spruill, personal communication, September 19, 2006).

In 1991, the Mississippi Legislature charged the Department of Health with the responsibility for oversight of trauma system development. A trauma registry was established the following year. By 1997, with passage of SB 2861 during the Regular Session, Mississippi's Legislature designated a seventeen member Trauma Care Task Force to plan the development of a trauma system. The task force presented its recommendations to the Governor and the Legislature during the same year.

In 1998, with passage of HB 966 during the Regular Session, the Legislature charged the Bureau of Emergency Medical Services (BEMS) at the Mississippi Department of Health with leading the development of a statewide trauma care system: *The department acting as the lead agency, in consultation with and having solicited advice from the EMS Advisory Council, shall develop a uniform nonfragmented inclusive statewide trauma care system that provides excellent patient care. It is the intent of the Legislature that the purpose of this system is to reduce death and disability resulting from traumatic injury, and in order to accomplish this goal it is necessary to assign additional responsibilities to the*

*department. The department is assigned the responsibility for creating, implementing and managing the statewide trauma care system. The department shall be designated as the lead agency for trauma care systems development. The department shall develop and administer trauma regulations that include, but are not limited to, the Mississippi Trauma Care System Plan, trauma system standards, trauma center designations, field triage, interfacility trauma transfer, EMS aero medical transportation, trauma data collection, trauma care system evaluation and management of state trauma systems funding. The department shall take the necessary steps to develop, adopt and implement the Mississippi Trauma Care System Plan and all associated trauma care system regulations necessary to implement the Mississippi trauma care system. The department shall cause the implementation of both professional and lay trauma education programs. These trauma educational programs shall include both clinical trauma education and injury prevention. As it is recognized that rehabilitation services are essential for traumatized individuals to be returned to active, productive lives, the department shall coordinate the development of the inclusive trauma system with the Mississippi Department of Rehabilitation Services and all other appropriate rehabilitation systems (§ 41-59-5 (5) Mississippi Code, 1972 Annotated).*

Legislation defined key components of Mississippi's trauma structure. The "trauma system" is defined by Mississippi code as *a formally organized arrangement of health care resources that has been designated by the department by which major trauma victims are triaged, transported to, and treated at trauma care facilities. As part of an organized system, trauma care facilities must be formally established. Such facilities are defined by State code as a hospital located in the State of Mississippi or a Level I trauma care facility or center located in a state contiguous to the State of Mississippi that has been designated by the department to perform specified trauma care services within a trauma care system pursuant to standards adopted by the department. Participation in this designation by each hospital is voluntary. A statewide trauma registry was established by 1992. Mississippi code states: "Trauma Registry" means a collection of data on patients who receive hospital care for certain types of injuries. Such data are primarily designed to ensure quality trauma care and outcomes in individual institutions and trauma systems, but have the secondary purpose of providing useful data for the surveillance of injury morbidity and mortality (Section 41-59-3 Mississippi Code, 1972 Annotated).*

The legislation also established the Trauma Care Systems Fund: *Five dollars collected from each assessment of ten dollars as provided in Section 41-59-61 and any other funds made available for funding the trauma care system, shall be deposited into the fund. Funds appropriated from the Mississippi Trauma Care Systems Fund to the State Board of Health shall be made available for department administration and implementation of the comprehensive state trauma care plan for distribution by the department to designated trauma care regions for regional administration, for the department's trauma specific public information and education plan, and to provide hospital and physician indigent trauma care block grant funding to trauma centers designated by the department. All designated trauma care hospitals are eligible to contract with the department for these funds (Section 41-59-75, Mississippi Code, 1972 Annotated).*

This legislation further authorized the creation of the Mississippi Trauma Advisory Committee (MTAC) as a subcommittee of the Mississippi Emergency Services Advisory Council. This subcommittee is charged in the Mississippi Code, Section 41-59-7, to *serve as the advisory body for trauma care system development and provide technical support to the department in all areas of trauma care system design, trauma standards, data collection, and evaluation, continuous quality improvement, trauma care system funding, and evaluation of the trauma care system and trauma care programs. The Act outlines the procedures for selecting members: The membership of the MTAC shall be comprised of Emergency Medical Services Advisory Council members appointed by the chairman.*



The *Mississippi Trauma Care System Regulations* have subsequently been developed and recommended by MTAC. MTAC presents its recommendations to the Mississippi State Board of Health which officially promulgates the regulations. The current chairman of both the EMS Advisory Council and the MTAC is the State Health Officer (Mississippi Department of Health, 2005).

Besides the traffic fine of \$5 per moving violation, which generated approximately \$2 million annually, the Mississippi Legislature appropriated \$6 million in additional funding during the 1999 legislative session into the Trauma Care System Fund. These extra monies originated from the Health Care Expendable Fund and brought the total Trauma Care System Fund up to \$8 million. The first checks were sent out to newly designated trauma centers in the year 2000. Roughly \$6.5 million from the Trauma Care System Fund was disbursed for uncompensated care that year (Mississippi Department of Health, 2005).

The *Mississippi Trauma Care System Plan* was revised and approved in 2002 by the Mississippi State Board of Health; implementation of this plan began in 2003. Seven trauma regions were developed across Mississippi: Delta (1), North (2), Central (3), East Central (4), Southwest (5), Southeast (6), and Coastal (7). Refer to Appendix A for a map of Mississippi's trauma regions. Each hospital that volunteers to participate in the State's trauma care system must pass inspection for their designation as a Level I, Level II, Level III, or Level IV trauma center. Level I is the highest level of trauma center designation. Appendix B contains a listing of all participating hospitals in Mississippi and their trauma level designation (Mississippi Department of Health, 2005).

The Mississippi Trauma Advisory Committee recommended and the State Board of Health adopted significant revisions to the *Mississippi Trauma Care System Regulations* during 2004. Changes were made in the following areas:

- Definitions
- Trauma registry inclusion criteria
- Level IV trauma care regulations
- Level IV inspection criteria
- Level IV emergency department charting (Mississippi Department of Health, 2005).

The primary change made was to give Level IV hospitals a flat reimbursement rate of \$10,000 (personal interviews with MTAC Committee members including the Chairman, on August 25, 2006). Before the revisions, Mississippi Department of Health reimbursed Level IV hospitals in the same manner as the higher level centers: per uncompensated trauma case (Mississippi Department of Health, 2005).

In 2005, the Mississippi Legislature authorized a \$5 increase in the assessment on moving traffic violations for the Trauma Care System Fund, for a total of \$10 per ticket (Section 41-59-75, Mississippi Code, 1972 Annotated). The state began submitting statewide trauma data to the American College of Surgeon's National Trauma Databank, a collection of trauma center hospital data from across the nation. Approval by the State Board of Health was given to develop a new trauma registry program and implementation is scheduled to take place by the end of 2006 (Mississippi Department of Health, 2005).

## ■ Burn Center

Part of specialized care for traumatic injury includes treatment for severe burns. As of June 1, 2005, the only specialized Burn Center in Mississippi stopped accepting critically burned patients. On June 9, 2005, the Governor's Burn Care Advisory Group was formed to review and make recommendations concerning Mississippi burn victims and their treatment.

Delta Regional Medical Center-Mississippi Firefighters Memorial Burn Center located in Greenville, a city in Northwest Mississippi, was the only burn care center in the state. Built in 1982, it served as a separate unit of Delta Regional Medical Center with a sixteen bed capacity. Before it became a separate building, there was a burn care specialty unit with 10 beds in the hospital, managed by a plastic surgeon since 1970. When the new facility was completed, it was treated as a department of Delta Regional Medical Center, garnering supplementary support as other departments within the hospital from management and a board of directors (Governor's Burn Care Advisory Group, 2005).

The Governor's Burn Care Advisory Group received and analyzed trauma registry data collected by the Mississippi Department of Health during fiscal year 2004. The trauma registry only includes data from hospitals designated as trauma centers, not from all hospitals delivering trauma care. As stated earlier, Delta Regional Medical Center did not submit data to the trauma registry. With this caveat in mind concerning trauma registry data, of 147 seriously burned patients transferred during fiscal year 2004, seventy (48%) were sent to Mississippi's Burn Center and seventy-seven (52%) to out of state facilities. From these data it was discovered that the Burn Center at the University of South Alabama treated 64% of the 77 burn patients transferred to out-of-state facilities. Delta Regional Medical Center submitted their burn care data to the Governor's Burn Care Advisory Group for fiscal year 2004 also. These data showed that 235 Mississippians were given inpatient care at the Burn Center. In addition, 23 inpatients were out-of-state residents (2005). No published data show how many uncompensated care burn victims were treated or how much uncompensated burn care was costing the Burn Center.

### **History of Legislative Support**

The Mississippi Legislature did not create the Burn Center by statute, but did help support the center over a span of twenty years. Legislators appropriated \$750,000 to support its construction in 1979. Also that year, Mississippi Code of 1972, Section 21-19-58 was enacted to allow counties and municipalities, *"in their discretion, to make contributions"* to the Burn Center *"from the general fund or federal revenue sharing funds."* Section 27-39-331 was enacted in 1985 to authorize the board of supervisors of any county, *"in its discretion, to set aside, appropriate, and expend moneys from the general fund"* in order to support the Greenville Burn Center. In 1989, section 27-39-332 of the Mississippi Code of 1972 gave any county's board of supervisors the *"discretion to levy a tax not to exceed one (1) mill per annum upon all taxable property of the county"* for Burn Center funding (Governor's Burn Care Advisory Group, 2005).

A trust fund in the State Treasury, the Mississippi Firefighter's Memorial Burn Center Fund, was established in 1992 under section 7-9-70 of the Mississippi Code. This fund was authorized to receive any state fees, private gifts, donations, bequests, trusts, grants, endowments, transfer of monies or securities or any other currency from any source. The Legislature designated that one dollar from select license tag fees would be deposited into the Burn Fund (Section 27-19-56 of the Mississippi Code, Annotated, 1972). The Legislature historically appropriated the earnings of this Fund to the Delta Regional Medical Center in support for the Burn Center. In 1995, the Legislature appropriated \$500,000 to buy equipment for the Burn Center. Legislation in 2000 (section 27-7-88 of the Mississippi Code) authorized individual Mississippi tax payers to contribute a part of their tax refund to the Burn Fund. In 2003, section 27-19-44.3 of the Mississippi Code was enacted so that the Burn Center had to file an annual report to the legislature by January 10<sup>th</sup> of each year detailing the expenditures from the Burn Fund (Governor's Burn Care Advisory Group, 2005).

When it was announced that the Mississippi Firefighters Memorial Burn Center at Delta Regional Medical Center was to close in mid-year of 2005, the Legislature passed Senate Bill 2067 to cease public funding directed to the center for burn care on July 17, 2005. Section 7-9-70 was amended to rename the Mississippi Firefighters Memorial Burn Center Fund as the Mississippi Burn Care Fund which, in turn, received the balance of the Firefighters Fund. This amendment also established the Mississippi Department of Health as the administrator of the Mississippi Burn Care Fund. Principal and interest of the Fund were to be appropriated by the Legislature to the Department of Health for the purpose of carrying out its responsibilities under the EMS laws. Sections 21-19-58, 27-39-331, as well as section 27-39-332 were also amended to authorize any county board of supervisors to appropriate funds to the Mississippi Burn Care Fund. An amendment to section 27-19-44.3 requires the Department of Health to be the agency in charge of filing an annual report to the Legislature by January 10<sup>th</sup> of each year regarding Burn Fund expenditures. The department is also required in section 41-59-5 of the Mississippi Code to develop procedures within the trauma system for organizing the transfer of burn patients to hospitals that can care for these special cases and to reimburse such institutions for this care from funds appropriated from the Mississippi Burn Care Fund (Section 7-9-70 ff Mississippi Code of 1972, Annotated).

To carry out these functions, the State Board of Health promulgated regulations effective July 1, 2005 stating that qualified Burn Centers may participate in reimbursement of caring for Mississippi burn victims by cooperative agreement with the Department. Reimbursement to all participating hospitals was to be determined based on weight of charges due to uncompensated care of Mississippi burn patients (Governor's Burn Care Advisory Group, 2005).

## **Reasons for Closure**

Two major problems plagued Mississippi's only Burn Center. One problem was sustainable funding for the facility to remain financially solvent, despite all the statewide efforts legislatively and by the citizens of Mississippi. The other hurdle that resulted in closure of the center in Mississippi was the inability to recruit and retain burn care physician specialists as well as nurses (Governor's Burn Care Advisory Group, 2005). These two issues are also major hindrances with all types of trauma care across the state. The circumstances leading to the Burn Center closure could foreshadow the future for all trauma care in Mississippi if actions are not taken to address these trends.

### *Financial Issues*

From 1982 to May 8, 2005, the Mississippi Memorial Firefighters Burn Center cared for 250 inpatients per year on average, as reported by Delta Regional Medical Center. Annual operating costs, according to Delta Regional Medical Center, were around \$7 million for the past few years. Indirect costs added another \$3 million to expenses for a total of roughly \$10 million. Around 2,400 outpatients were served annually as well, but no financial data were available concerning additional costs of care for these patients (Governor's Burn Care Advisory Group, 2005).

Despite all the past financial support by the Legislature and citizens of Mississippi, the uncompensated cost of caring for burn patients in Mississippi's Greenville facility was one of the major reasons cited by Delta Regional Medical Center for ceasing care for such patients. The hospital stated to the Governor's Burn Care Advisory Group in 2005 that "*uncompensated care threatens the viability of the Burn Center, and only significant changes in the support mechanism of the facility can ensure its survival. A high percentage of burn victims are indigent and have no means to pay their bills*". Because the Burn Center did not elect to participate in the statewide trauma registry, no complete data were available to substantiate these claims. Transfers of burn patients from participating trauma centers to the Greenville Burn Center comprised the only data available, omitting hospitals that transferred patients not participating in the statewide trauma system.

The non-profit Mississippi Firefighters Memorial Burn Association reported governmental contributions that ranged from \$1.2 to \$1.3 million a year (IRS 990 Forms, 2002-2004). The Mississippi Firefighters Memorial Burn Center Fund received approximately \$300,000 annually from assessments on car tag fees and donations from the public. The Legislature appropriated earnings from this Fund annually to the Delta Regional Medical Center. In 2005, when the Mississippi Firefighters Memorial Burn Center Fund was converted to the Mississippi Burn Care Fund upon the closure of the Burn Center, the Fund had a balance of \$2.1 million (Governor's Burn Care Advisory Group, 2005).

Therefore, the Burn Center was being reimbursed roughly \$1.3 million per year stemming from contributions from local governments, trust fund investment earnings, and funds raised by the Firefighters Memorial Burn Association. As stated earlier, the annual cost to operate the Burn Center reported by Delta Regional Medical Center was approximately \$10 million (Governor's Burn Care Advisory Group, 2005). The amount paid by third party payers is unknown.

### *Specialist Recruitment and Retention*

Another major reason cited by Delta Regional Medical Center to close the Mississippi Firefighters Memorial Burn Center was "*failure to obtain proper and adequate physician coverage for the Burn Center...in addition to the physician coverage issue, the Burn Center also faces staffing challenges, resulting from the national nursing shortage*." On May 9, 2005, the Burn Center bed capacity had to be reduced from 16 to 6 because one of two specialized burn surgeons left the organization (Governor's Burn Care Advisory Group, 2005).

It is known that medical staff can be hard to recruit in the vicinity of the Burn Center, Washington County, as it is a designated Health Professional Shortage Area according to the Health Resources and Services Administration (2006). The Mississippi Office of Nursing Workforce reported in 2005 that vacancy rates were 20% and 11% respectively for registered nurses and licensed practical nurses for this area of the state. Prospects for filling physician and nursing positions for such specialty care would be difficult. Therefore, considering these staffing conditions and costs the board of directors at Delta Regional Medical Center voted to cease burn care treatment on May 31, 2005 and reorganize the Burn Center into a critical care facility (Governor's Burn Care Advisory Group, 2005).

## Pros & Cons of Closure

Mississippi no longer has a dedicated, specialized center for burn care trauma. A few other states also do not have Burn Centers, including Delaware, Idaho, Montana, New Hampshire, Rhode Island, and Wyoming. All states surrounding Mississippi do have specialized burn facilities, including Alabama, Arkansas, Georgia, Louisiana, and Tennessee. Combined, these states have a total of ten Burn Centers and all ten were contacted by the Mississippi Department of Health to participate in caring for the state's burn patients. Each of these centers has trained burn surgeons and staff. Since Mississippi's Burn Center stopped taking patients, the Mississippi Department of Health has been charged by the Legislature with using trust fund money to compensate providers of care for burn victims who must be transferred out of state. As part of this responsibility, the Department of Health alerted all hospitals in the state with emergency rooms to update patient transfer arrangements for critical burn cases. At an Annual Southern Region Burn Conference during 2005, Mississippi's State Health Officer met with regional Burn Center directors to invite their participation in the Mississippi Burn Care Fund to compensate for care of Mississippi's burn patients. As noted earlier, the balance of the fund in 2005 was \$2.1 million. According to the Department of Health as of September 2006, no Burn Center had filed for reimbursement to date, and other states continued to see Mississippi burn cases regardless of their ability to pay (Governor's Burn Care Advisory Group, 2005).

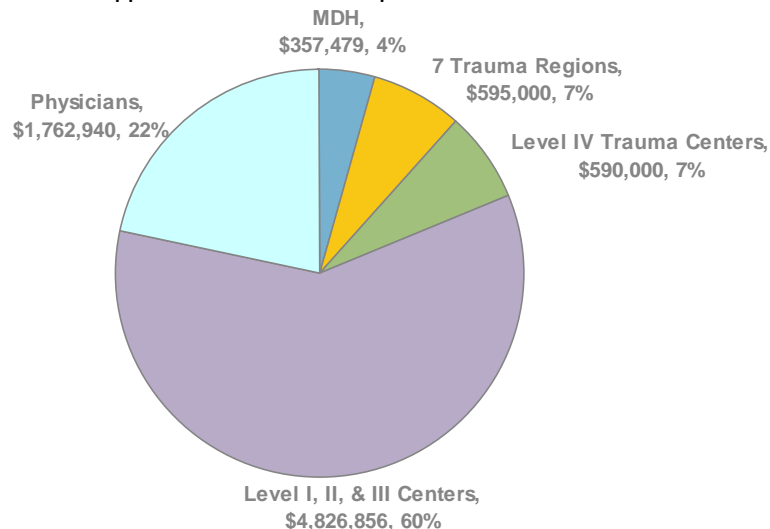
The lack of a Burn Center in Mississippi creates a hardship on family members who are no longer as nearby to visit burn patients. The Department of Health reported, however, that no complaints from citizens or hospitals in Mississippi have been received regarding problems with transfer of burn victims to out of state centers. The Governor's Burn Care Advisory Group assessed the resources required to create another Burn Center for Mississippi during 2005, and determined that developing a new Burn Center would cost from \$10 to \$20 million, plus operating expenses of around \$10 million in additional funding each year. The number of severely burned Mississippians per year is relatively small, and half of those were already being transferred out of state. A new site may not have the volume to sustain a new Burn Center. Therefore, it was determined by burn care experts that the most efficient policy action would be to use the Burn Fund to reimburse other centers for caring for Mississippi burn patients (Governor's Burn Care Advisory Group, 2005). Mississippi legislators enacted this recommendation via amendments to the Mississippi Code of 1972, Section 7-9-70 ff, giving the Mississippi Department of Health the authority to organize out-of-state burn care.

■ Trauma System Financing

Financing of the trauma care system in Mississippi is intricate. Mississippi has achieved an important step via legislation establishing a permanent trauma care fund. The Trauma Care Systems Fund in Mississippi is composed of two sources of dollars. One source is the Health Care Expendable Fund yearly appropriation. In 2006, the \$5,326,901 was appropriated from the Health Care Expendable Fund by House Bill 1564. The same amount was appropriated by House Bill 69 in 2005 and House Bill 1735 in 2004. The past three years show a decrease from earlier appropriations from the Health Care Expendable Fund of \$6,000,000 during 1999-2003 legislative sessions (House Bills 1616, 1625, 1616, 1787, & 1544, respectively). The second source of funding is through assessments on fines for moving traffic violations. The assessment on moving traffic violations added another \$3,111,087.58 to the Trauma Care Systems Fund in 2005, for a total of \$8,437,988.58 in funding that year. During 1998-2004, an allocation of \$5 per ticket from moving traffic violations went to the Trauma Care Systems Fund. The 2005 Legislature increased the assessment to \$10 per ticket to be effective July 1, 2005 (EMS Annual Report, 2005).

All trauma regions and centers that participate in the statewide trauma care system receive financial aid as shown in Figure 1. The Trauma Care Systems Fund pays for the Mississippi Department of Health's contracts with the seven non-profit trauma regions at a total of \$595,000 per year. Level IV trauma centers obtain \$10,000 each per year to stabilize patients for transfer and report data on trauma victims to the trauma registry. In 2005 there were 59 Level IV trauma centers, so the annual amount was \$590,000. Thus, compensation for these two parts of the statewide system was \$1,185,000 out of the \$8.4 million from the Trauma Care Systems Fund. After administrative costs are funded, the remainder in the Fund is available for uncompensated care. Level I, II, and III trauma centers were compensated for documented and qualifying uncompensated care with the remaining available Trauma Care Systems Fund balance of \$6.9 million (Mississippi Trauma Care System Regulations, 2005).

Figure 1: Mississippi Trauma Care Fund Expenditures, 2005



Source: Mississippi Department of Health, Trauma Care Trust Fund Statistical Analysis, 2005

Uncompensated care dollars are allocated to Level I, II, and III designated trauma centers based on guidelines set forth in the *Mississippi Trauma Care Systems Regulations* developed and published by the Mississippi State Board of Health. The 2005 version states that uncompensated care funds are distributed to trauma centers according to the following rules: *Uncompensated services are care for which the provider has been unable to collect payment because of the patient's ability to pay. A claim is considered to be uncompensated if, after the provider's due diligence to collect monies due, total payment from all sources (including third-party payors) of five percent (5%) or less has been made on the total trauma-related gross charges. Any payment received from Medicaid shall preclude reimbursement from the TCTF [Trauma Care Trust Fund], whether the five percent (5%) payment threshold has been met or not. Only patients that meet trauma registry inclusion criteria are eligible for uncompensated care reimbursement.*

*Mississippi Trauma Care System Regulations* also divide funding for uncompensated trauma care into two distinct categories: 70% of the fund is made available to hospitals providing such services while the other 30% reimburses eligible physicians. There is no documentation available on the rationale for this distribution formula. Hospital funds are obtainable based on the facility's Diagnosis Related Groups (DRG) Relative Weights for those qualifying cases submitted. Participating physicians' compensation is based on the Resource-Based Relative Value System (RBRVS). These refunds are reviewed and sent out annually to the hospitals and physicians via their respective Trauma Care Region (2005).

Only certain physician specialties are eligible to apply for the 30% of uncompensated care trust fund dollars: orthopedic surgeons, general surgeons, neurosurgeons, and anesthesiologists. In 2005, qualifying surgeons with gross charges of \$10 million received \$1,762,940.80, while eligible anesthesiologists collected \$305,712.12 out of gross charges of \$2.2 million. Total trauma system physicians numbered 285 with an average reimbursement being \$7,258.43 each. Eleven hospitals were eligible for the 70% available to cover hospital uncompensated care. Those facilities submitted \$100 million worth of gross charges for 4,995 uncompensated care patients and were awarded \$4,826,856.83 during 2005 (Mississippi Trauma Care Systems Fund Statistical Analysis). This amount does not include losses due to underpayment by some third party payers, such as Medicaid. The impact of the change in Medicaid's payment structure from a cost-based system to a prospective payment based system is yet unknown.

Trauma centers, therefore, do receive financial incentives from the Trauma Care Systems Fund for participating in the system, but at a fraction of the cost. Many factors underscore this financial aid, and adequate trauma patient care in Mississippi remains impeded by a variety of factors. In the following sections the major factors are explored.

## ■ Strengths of Mississippi's Trauma Care System

Mississippi has several strengths when it comes to its trauma care system. First, the system has a formal organization supported by the Mississippi Department of Health's (MDH) statutory authority to designate trauma centers. Designations of Level I, II, III, and IV trauma hospitals by MDH are based on guidelines from the American College of Surgeons as well as the American College of Emergency Physicians. Furthermore, regulations exist to direct trauma care center operations. Data collection at trauma care centers has been implemented, and the state has a Trauma Registry. A trauma center with the highest possible designation for trauma care, Level I, is centrally located in the state. All these factors have laid a strong foundation for Mississippi to build a functional trauma system.

### Structure

As authorized by section 41-9-5(5) in the Mississippi Code of 1972, the Mississippi Department of Health (MDH) is the lead agency charged with developing a homogenous, non-fragmented, inclusive statewide trauma system with guidance from the Emergency Medical Services Advisory Council and the Mississippi Trauma Advisory Committee. The MDH is assigned the responsibility for creating, implementing, and managing the statewide trauma system in order to decrease disability and death from traumatic injury. MDH is to accomplish this by developing and administering regulations that include "*the MS Trauma Care System Plan, trauma system standards, trauma center designations, field triage, inter-facility trauma transfer, EMS aero medical transportation, trauma data collection, trauma care system evaluation and management of state trauma systems funding.*" Professional as well as lay trauma education programs are to be carried out via MDH for both clinical trauma education and injury prevention. MDH is also tasked with coordinating the development of the inclusive trauma system with the Mississippi Department of Rehabilitation Services and all other appropriate rehabilitation systems in the purpose of returning citizens back to productive lives as soon as possible.

The trauma care system in Mississippi is organized by a trauma center's designated level of care. Hospitals seeking to become designated trauma centers do so voluntarily. There are four levels of trauma care designation. The requirements for each of the four levels are listed in Figure 2. These designations are adapted from the American College of Surgeons Committee on Trauma and the American College of Emergency Physicians guidelines for facilities providing trauma care (Bureau of Emergency Medical Service's Annual Report, 2005). See Appendix C for the complete guidelines the Mississippi Department of Health utilizes for designating trauma centers.



Figure 2. Trauma Center Designation Levels

<u>Level I</u>	<u>Level II</u>	<u>Level III</u>	<u>Level IV</u>
Emergency Department	Emergency Department	Emergency Department	Emergency Department
Full-Service Surgical Suite	Full-Service Surgical Suite	Continuous General Surgical Coverage	Initial Evaluation & Assessment of injured patients
Intensive Care Unit	Intensive Care Unit	Continuous Orthopedic Coverage	Most Patients Require Transfer to a Higher Level Trauma Facility
Diagnostic Imaging	Diagnostic Imaging	Transfer Agreements with Level I & II Trauma Centers for Patients Requiring a Higher Level of Care	Must Have Transfer Agreements in Place with Level I, II, & III Trauma Centers
Residency Program	Act as a Referral Facility for Level III & IV Trauma Centers	Referral Center for Level IV Trauma Centers	
Ongoing Trauma Research	Transfer Agreement with Level I Trauma Center for Specialty Care		
Twenty-Four Hour Trauma Service			
Act as a Referral Facility for Level II, III, & IV Trauma Centers			

Source: Mississippi Department of Health, Bureau of Emergency Medical Services Annual Report, 2005

Trauma regions are organized based on geography. There are seven trauma care regions in Mississippi. Appendix A contains a map detailing the trauma regions and Appendix B lists all hospitals participating in the system.

The rationale for evaluating and designating hospitals based on their capabilities to care for trauma victims is to ensure patients receive proper care for their injuries by bypassing hospitals not able to care for their special needs (Bureau of Emergency Medical Service's Annual Report, 2005). Hospitals, however, may choose to participate at lower levels, as the system designation level is voluntary. Mississippi has a major strength in this area, as the state has the authority to actually designate trauma centers. Mississippi does this through the Mississippi Department of Health's Bureau of Emergency Medical Services. All other southern states except Alabama have elected to have trauma center designation authority as well (Health Resources and Services Administration, 2002).

## Planning & Operations

While the ideal situation is to transport seriously injured trauma patients quickly to a Level I or Level II trauma center, the reality is that large parts of Mississippi lack a Level I or Level II trauma center. Most rural areas do not have higher level trauma centers, and patients must be stabilized before being transported to a higher level center for specialized treatment. Therefore, the goal was to create an inclusive model to match appropriate responses to patient needs (Mississippi Trauma Care System Plan, 2005).

According to the U. S. Health Resources and Services Administration, inclusive trauma systems are pre-planned, comprehensive, and coordinated both statewide and locally. Good trauma systems include all health care facilities capable of caring for injured patients. This inclusiveness ranges from pre-planned trauma centers as well as non-trauma center resource allocations as a means to ensure cost-effective injury treatment to the public (Health Resources and Services Administration, 2006). Thus, to be an inclusive trauma system, immediate stabilization of traumatized patients and transfer from local receiving hospitals to trauma centers must be planned. To aid coordination of such efforts, a regional approach was deemed the best way to garner quick care for trauma patients (Mississippi Trauma Care System Plan, 2005).

Mississippi's trauma care system is, therefore, based on the concept of regional medical care via patient flow patterns. From this rationale and geographic location of hospitals, the seven trauma care regions were created. Each trauma care region is incorporated as a non-profit corporation with a governing board of directors. Regions contract with the Mississippi Department of Health's Bureau of Emergency Medical Services to disperse Trauma Care Systems Funds to their respective trauma centers. These non-profit organizations are also charged with collecting regional trauma data as well as establishing regional treatment, triage, and patient destination protocols. Each region is responsible for developing a trauma care plan that must be submitted to the Bureau of Emergency Medical Services (BEMS). Once regional plans are approved by the BEMS, then they are incorporated into the state trauma plan. Strengths of planning and operating the trauma system at both regional and statewide levels include: integrating trauma centers into the existing emergency care system, dedicating resources for administration of timely patient care, and promoting commitment of hospital staff to provide appropriate trauma care (Mississippi Trauma Care System Plan, 2005).

## **Data Collection**

Trauma Registry data collection is essential for planning, research, injury prevention, and evaluating and improving system performance and hospital operations. To be included in the state's trauma system, all trauma hospitals must participate in the trauma registry. Each hospital participating in the trauma system collects and reports data to their region. All data fields are the same for each region. Trauma regions submit data at least annually to the Bureau of Emergency Medical Services, Division of Trauma. From these data, statewide information can be compiled. For example, the registry recorded 16,949 trauma patients across Mississippi during 2005, with eighty-eight percent derived from accidents. Fifty-six percent experienced trauma due to motor vehicle crashes, which was the number one cause of trauma. From these data, it can be deduced that accidents, particularly motor vehicle crashes, should be targeted for education and prevention. Another advantage with the current method of trauma data collection is that the data fields are standardized, so aggregation at the state level is possible (Bureau of Emergency Medical Service's Annual Report, 2005).

## **Legislative Funding Mechanism**

As noted in the history section, the Legislature in Mississippi has established statutory mechanisms for financial support of both the statewide trauma system and burn care. The roughly \$8 million annually in the Trauma Care Systems Fund derived from a portion of the tobacco settlement earnings and traffic fee

assessments helps reimburse both hospitals and physicians for uncompensated care. These dollars also support the administrative costs of trauma coordination at the state and regional levels (EMS Annual Report, 2005). Out-of-state burn centers have the Mississippi Burn Care Fund available if they choose to enter into a cooperative agreement with the Mississippi Department of Health to be compensated for uninsured or underinsured burn patients (Governor's Burn Care Advisory Group, 2005). No specific trauma care statutory funding exists in other states except California, Florida, Illinois, Nebraska, Ohio, Oklahoma, and Texas (National Conferences of State Legislatures, 2005).

## **Level I Trauma Center**

Level I trauma centers are the highest trauma center designation attainable. There are currently two Level I trauma centers designated by the Mississippi State Department of Health to treat trauma victims. The Regional Medical Center in Memphis, Tennessee is a Level I trauma center for Mississippians and the only out-of-state hospital participating in the Mississippi Trauma Care Systems Fund reimbursement for uncompensated care program (EMS Annual Report, 2005).

One Level I trauma center exists within the borders of Mississippi. The University of Mississippi Medical Center (UMMC) in Jackson serves as the sole Level I trauma center in Mississippi. UMMC is centrally located. It is easily accessible from many locations in the state. In 2005, UMMC's emergency department reported 101,297 patient visits, where 10,043 (10%) were due to trauma. Outpatient clinics affiliated with UMMC treated an additional 5,700 trauma cases. As Mississippi's only academic medical center, a hub of medical research and education, it is of great advantage to the state that UMMC participates in the trauma system. UMMC is particularly important to the central, east central, and southwest trauma regions, not only due to the area's containing the state's largest population density, but also because it is the lone trauma center designated higher than a Level IV across 28 surrounding counties (EMS Annual Report, 2005).

In 2005, UMMC's trauma center and physicians received the largest percentage of reimbursement from the Trauma Care Systems Fund at 37.7% (\$2.6 million). The hospital was reimbursed \$1.6 million for uncompensated trauma care in 2005. Surgeons and anesthesiologists received \$96 thousand (Trauma Reimbursement Statistics, 2005). Yet, UMMC reported \$26 million in uncompensated care charges during the same year (Mississippi Trauma Care Systems Fund Statistical Analysis, 2005).

Because of these many strengths, Mississippi's trauma system has served as an example to many other states across the nation. There are problems, however, occurring within the system that threaten its continued viability. The weaknesses of Mississippi's trauma system are outlined as follows.

## Structure and Administration

Mississippi Trauma Advisory Committee (MTAC), which is charged by the Legislature with providing advice and technical support in all areas of the Mississippi Trauma Care System, has not convened for a meeting since June 30, 2005 (Mississippi Department of Health, Trauma Calendar, 2006). As of July 1, 2006, all appointed members' terms have expired as detailed on the agency's website (Mississippi Department of Health, Trauma Advisory Committee, 2006). No new Emergency Medical Service Advisory Council (EMSAC) appointments have been made according to the Chairman. Since MTAC is a subcommittee of EMSAC, there are no eligible members to be appointed to the MTAC. Nevertheless, it has been over one year since the group has convened, and no planning or discussion of improving the statewide trauma system has occurred within the MTAC.

The seven regional non-profit organizations that administer trauma care at the regional level function at varying levels of performance although they are contractually obligated to carry out certain duties as outlined in the *Mississippi Trauma Care System Regulations*. Regional functions include documenting referrals for all participating hospitals as well as reimbursing trauma hospitals and surgeons for uncompensated care. Some regions have Level IV trauma centers only, while others have a much larger burden of regulating and coordinating trauma care for higher level centers. All regions, however, receive the same amount of yearly funding from the Trauma Care Systems Fund, \$85,000, to carry out their duties according to the *Mississippi Trauma Care System Regulations* (Mississippi Department of Health, 2005).

## Data and Evaluation

Since not all hospitals participate in the trauma system, even though they may treat trauma cases, they are not required to report trauma data. Therefore, true trauma mortality and morbidity rates are not available. Although the Mississippi Department of Health maintains a statewide trauma registry containing data compiled from all participating trauma centers, there is little evidence that these data have been used in recent years for quality improvement or evaluation at the state level. No evidence exists that these data are utilized in state planning and injury prevention campaigns. Some statewide aggregate data are presented each year in the *Mississippi Emergency Medical Services Annual Report*. Even though regions collected trauma registry data until recently, there is little evidence that regions conduct performance improvement activities based on hospital trauma care outcome information. Data are also not being linked to the statewide Emergency Medical Services database for evaluation of pre-hospital response to trauma calls. Trauma registry employees report that registry data are difficult to access or analyze, and that a new registry software system has been purchased. Yet, regions report that with new changes in the trauma registry system that they can no longer access their region-specific data.

## Rural Access

Rural areas have barriers to providing citizens with pre-hospital and hospital services in a timely manner. Ambulance services typically make fewer runs in rural versus urban settings. The cost per run in non-urban places can be significantly higher due to low volume and greater distances. Yet, hospitals in these areas must serve as the safety net for initial stabilization of the injured before transfer to higher level trauma centers (American Trauma Society, 2004). Regionalization of the trauma system was one strategy to aid these parts of the state in accessing proper care. Yet, some regions do not have Level I or Level II trauma centers in close proximity. Three of the seven regional trauma systems lacking such access to higher level trauma care are shown in Figure 3 (EMS Annual Report, 2005).

Figure 3. Trauma Regions with No Level I or Level II Trauma Centers

<u>Trauma Region</u>	<u>Number of Level</u>	<u>Number of Level</u>
	<u>III's</u>	<u>IV's</u>
Coastal Trauma Care Region	2	6
East Central Trauma Care Region	0	7
Southwest Trauma Care Region	0	6

Source: EMS Annual Report, Mississippi Department of Health, 2005

## Provider Recruitment & Retention

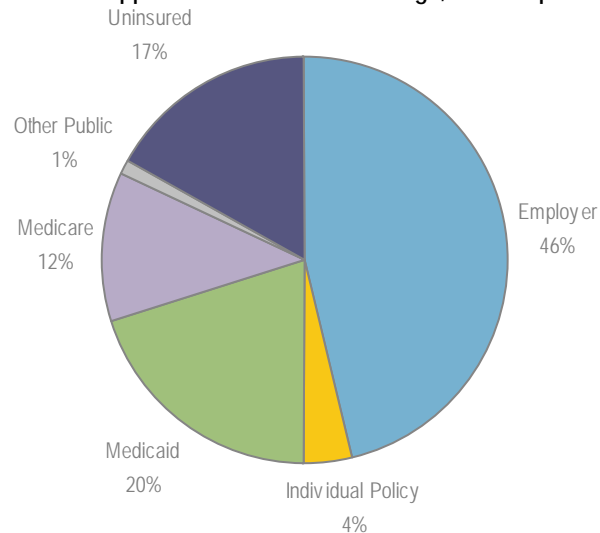
Mississippi's trauma system is also suffering from a shortage of specialty health care human resources. The state ranked 50<sup>th</sup> nationwide in board certified emergency physicians per annual emergency room visits (American College of Surgeons, 2006). For 2006-2007, Mississippi has an estimated 1,032 anesthesiologists, general surgeons, neurosurgeons, and orthopedic surgeons who are actively practicing either full or part-time. Mississippians have a maximum of 35 possible trauma specialists per 100,000 population if each of them were available 24 hours per day (Mississippi Health Policy Research Center, Mississippi State University, 2006). Only 285 physicians (27.6%) out of these potentially eligible trauma specialists applied for trauma fund reimbursement during 2005 (Mississippi Trauma Care Systems Fund Statistical Analysis).

Trauma center physicians, especially surgeons and neurologists, are difficult to recruit for a variety of reasons. Trauma physicians may decide to no longer practice in a trauma center because they must be available to take call at any time. Often, trauma occurrences are most frequent during nights, weekends, and holidays. This demand is brutal on physicians' personal lives and impacts their ability to manage elective treatments or private practice. It cannot be predicted when a trauma emergency may occur; therefore, it hard to maintain a regular schedule for these other endeavors. For Level I trauma centers, a surgeon specialized in trauma care delivery must be available twenty-four hours a day. Trauma surgeons also must have seven years of specialty training after medical school graduation. Unfortunately, fewer general surgeons are electing to specialize in trauma surgery. Further shortages are inevitable as baby boomer trauma surgeons retire. High amounts of uncompensated care and high levels of medical malpractice risk make the profession even less attractive as a career compared to other specialties (Institute of Medicine, 2006).

## Uncompensated Care

Caring for the uninsured and underinsured in Mississippi is a challenge. It is estimated that around 17% of Mississippians are uninsured, while 16% of all Americans are uninsured. Figure 4 details the various payer types for health care in Mississippi. The uninsured and persons covered by Medicare, Medicaid, and other public insurance categories constitute 50% of the state population, roughly 1.4 million people. The United States has 42% of the population encompassing these payer categories. Less than half of the population has employer-based health insurance in Mississippi, and 58% are insured through an employer nationwide (Henry J. Kaiser Family Foundation, 2005). Health care providers cover deficits from below-cost payments from the uninsured, Medicaid, and Medicare with amounts received from private insurance carriers (Dobson, DaVanzo, & Sen, 2006). Mississippi, therefore, has fewer cost recovery resources.

Figure 4. Mississippi Health Insurance Coverage, Total Population, 2004-2005



Source: Henry J. Kaiser Family Foundation: StateHealthFacts.org, 2005

In 1986, Congress enacted the Emergency Medical Treatment & Labor Act (EMTALA) to mandate access to emergency services regardless of a patient's ability to pay. All hospitals are required to provide stabilizing treatment for patients with emergency conditions including trauma. This law also decrees that if a hospital is unable to stabilize a patient within its capacity or if a patient asks, then a transfer to another facility must be arranged (Centers for Medicare & Medicaid Services, 2006). With so many people lacking either access to community physicians or the financial resources for non-urgent health care, emergency departments are being overwhelmed. Some patients prefer emergency room hours while others are referred there by a physician. As a result, the Institute of Medicine reported that 33% of emergency room visits are not for dire reasons (Chapter 2, 2006).

Mississippi ranks highest above other states for chronic illnesses such as heart disease. Mississippians have the highest percent of the population lacking access to primary care at 30.1% (Morgan & Morgan, 2006). The state also has a high percentage of citizens below the Federal poverty level at 18.3% versus the national percentage of 12.5% (U.S. Census Bureau, 2003). When chronic illnesses are not being properly managed due to poverty and lack of access to preventive care, people over-utilize the health system at more advanced states of disease. The emergency rooms have become the point of care for many people with non-urgent conditions. Mississippians that should be cared for in a doctor's office are seeking treatment inappropriately at emergency rooms because their chronic illnesses are not controlled. Therefore, trauma victims may not have access to timely care for their critical injuries due to emergency room crowding and shortage of staff.

Combining these factors with inadequate compensation to cover the high cost of running emergency rooms, the trauma system is weakened in its ability to properly treat life-threatening injuries. In fact, the American College of Emergency Physicians graded each state on the status of emergency medicine in 2006. Mississippi's was given a C- overall, which ranked the state below the national median grade for support of an emergency care system to meet the needs of its residents. Appendix D contains the full report card on Mississippi.

## ■ Trauma System Options

The development of a trauma system in Mississippi has crossed many of the beginning hurdles that other states have yet to cross. There are still needs, however, that must be addressed for the trauma system to function optimally. As noted nationwide, trauma systems are struggling to meet demand for human resources along with funding. Potential ways to address these issues and reorganize the system are examined that could help save more human lives as well as conserve scarce resources.

### **Comparison with Other States**

Mississippi is not alone with its struggles to develop and maintain an effective trauma system. A study was conducted in 2005 of all fifty states to characterize the current structure of trauma care and identify strengths, weakness, opportunities, and threats facing trauma care delivery in each state. Researchers determined that fourteen states have the least developed trauma systems based on the fact that they do not have the authority or a process in place to designate trauma centers. Twenty-seven states were identified at the mid-level of trauma system development, including Mississippi, and eight states were designated as having the most developed systems: California, Illinois, Maryland, New Jersey, New Mexico, New York, Oregon, and Washington. Each of these states has had authority to designate trauma centers ranging since 1978 (28 years) in Maryland to 1993 (13 years) in Washington. Mississippi has had this authority since 2000 (Man, Mackenzie, Teitelbaum, Wright, Anderson).

The most mature trauma systems distinguish themselves by incorporating disaster preparedness into existing trauma protocols so patients will be transported in a timely manner to hospitals with appropriate resources to treat specific needs. However, all states listed system planning and operations as strengths as well as important opportunities for future growth. Lack of adequate data and evaluation is a major weakness cited by states in the two more developed categories of state trauma systems. It should be noted that 98 percent of the states reported financing as the top threat and a major weakness for trauma care delivery. One-hundred percent of states with mid-level and mature trauma systems identified funding as the number one threat to their viability. All three levels identified recruiting and retaining physicians and nurses as another leading barrier for providing trauma care (Man, Mackenzie, Teitelbaum, Wright, Anderson, 2005). Clearly, financing the provision of trauma care is important for maintaining these systems across the United States.

Man, Mackenzie, Teitelbaum, Wright, and Anderson's 2005 study of state trauma systems compared each to characteristics that most mature trauma systems have in place as displayed in Figure 5. Mississippi meets 4 out of 9 mature trauma system characteristics. Highly developed trauma care systems have a few more operational and system protocols in place than Mississippi. While Mississippi's trauma system does have standardized protocols and training programs for pre-hospital participants such as ambulance services and paramedics, compliance of pre-hospital participants with these protocols is not assessed. No standard transfer protocols, standard policies stating which specific patients to transfer, or emergency department compliance assessments are in place regarding inter-hospital transfer arrangements. Mississippi has a trauma registry, but only trauma centers submit data. Fifteen other states collect non-trauma center data on trauma patients also, so that rates and comparisons can be reviewed regardless of the status of the facility.



Figure 5: Trauma System Characteristics for Mature Systems & Mississippi

	<u>Pre-Hospital Categorization &amp; Triage</u>			<u>Inter-Hospital Transfer Arrangements</u>			<u>Trauma Registry Data Submitted by</u>		Trauma Advisory Committee Present
	Standard Triage Protocol	Standard Training Program	Compliance Monitored	0020	Policy Specifies Patients to Transfer	Emergency Department Compliance Monitored	Trauma Centers	Non-Trauma Centers	
States w/ Mature Trauma System	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mississippi	Yes	Yes	No	No	No	No	Yes	No	Yes- but has not met in over 1 year

Source: Man, Mackenzie, Teitelbaum, Wright, and Anderson, 2005.

### Financing Mechanisms

High levels of uncompensated care associated with trauma discussed earlier cause some hospitals not to participate in the trauma system at their most competent level or not participate at all because of the risk for financial losses or physician exodus. Therefore, trauma care is dangerously becoming fragmented almost to the point it was before an organized trauma care system was developed.

In order to adequately fund uncompensated trauma care, many states generate revenue through fees on criminal cases, license plate tags, driver's license renewals, and similar services. States have also raised revenue by increasing tobacco, property, and other taxes (Yamaguchi, 2006).

States have developed some creative ways to generate funds for supporting trauma care and system development. The rationale for public funding is along the same lines as for fire and police services in that trauma systems are necessary services that should be available to all citizens. Most states doing so maintain trauma care funds in state treasuries for administration by their Department of Health or equivalent state agency. Some utilize the Department of Human Services for addressing Medicaid reimbursements and to leverage federal match dollars that may be available (Yamaguchi, 2006). Mississippi's legislators appropriate funds from the tobacco settlement trust fund and assessments on fines for moving traffic violations. Examples of what other states are doing to generate revenue for their trauma programs are listed below:

- California- appropriated \$10 million from its general fund for trauma centers in 2005. Counties also have authority to levy taxes to collect emergency medical services financing as well as trauma funding.
- Illinois- supports Level I and II trauma centers with a \$5 surcharge on moving traffic violation fines of \$55 or higher, \$105 surcharge on every conviction or suspension for driving under the influence, and a \$100 surcharge for all convictions of unlawful use or possession of weapons by felons/persons in custody of the Department of Corrections and illegal discharge of a firearm or illegal possession of a controlled substance. Approximately \$14 million collected from these fees were disbursed to eligible trauma centers in 2005.

- Oklahoma- receives half of fines for convictions of automobile offenses from drivers without a valid driver's license and adds \$100-\$200 surcharge on fines for conviction of drug and alcohol offenses. For every license renewal, \$5.50 is added to the fund. In 2004, an additional fifty-five cent tax was approved for every pack of cigarettes bought, and 7.5% of these revenues were allocated to trauma funds. For 2005, the fund sent \$4 million to trauma providers, hospitals, and emergency services.
- Maryland- established a physician services fund for trauma centers and trauma surgeons, orthopedic surgeons, neurosurgeons, critical care physicians, and anesthesiologists. It is financed from a \$5 charge on new vehicle titles and registration renewals. During 2003, monies in this fund approximated \$11,000,000.
- Virginia- created a \$50 fine that must be paid by persons with repeat convictions for drug and alcohol offenses, generating about \$200,000 per year. Another \$40 fee is charged to reissue a license or registration to people with a suspended driver's license, garnering around \$4.3 million each year. Level I, II, and III trauma centers in good standing are eligible for these funds.
- Texas- assigns points to drivers for traffic offenses and places a charge on driver's licenses based on points. Most offenses carry fines of \$100 or more while driving under the influence costs \$1,000-\$2,000 in fees. Of the fines, 49.5% are deposited into the state fund where 96% may be used for uncompensated trauma care at trauma centers or those pursuing trauma center designation. The fees generated \$18 million in 2004.
- Washington- charges \$6.50 to car dealers at the sale/lease of any new or used car and to the owner at the time of application for original or transfer titles regarding any type of vehicle, as well as \$5 per traffic violation collected by both city and county courts. A joint partnership has been created between the Department of Health and the State's Medicaid office to draw federal matching funds to enhance Medicaid trauma patient reimbursement rates. Level I, II, and III hospitals are eligible for funds as are trauma physicians at all trauma designation levels. From federal matching and these generated state funds, \$41.2 million was available for 2003-2005 combined to support the trauma system. Out of these funds, \$7.8 million went to trauma physicians (Yamaguchi, 2006).

This revenue is supplemental to other sources. The above states are provided as examples of ways to generate revenue for trauma systems.

## **Provider Recruitment and Retention**

While money is a limiting factor, ensuring that the appropriate doctors and nurses are available is critical to ensuring proper trauma care. Hospitals have been experimenting with various methods for recruiting and retaining appropriate medical specialists. Some of these strategies, however, may increase costs, and the overall impact to the trauma system should be considered.

One way some hospitals are responding is by paying for on-call time, especially for the physician workforce. Several of the Mississippi Trauma Advisory Committee members reported during August 2006 interviews that lack of payment for on-call services was an issue often raised by physicians at Mississippi Trauma Advisory Committee meetings.

The American College of Emergency Physicians published an information paper regarding paying physicians for on-call services. Mandating on-call for doctors to gain hospital staff privileges and credentialing may be useful and could help hospitals maintain Medicare eligibility. This may aid quality of care improvement issues regarding emergency department coverage at all times as well. Yet, shortages can persist if physicians move to hospitals not requiring on-call services and subsequent call burden increases for remaining physicians. Another possible approach to on-call physician pay involves calculating trauma patient volume, hospital trauma income, and physician trauma income into a formula to devise fair compensation. Calculations must be based on precise data from hospitals and trauma registries (2005).

Stipends for days served on-call are other means facilities use to compensate for on-call services according to the American College of Emergency Physicians (2005). However, doctors may continue to demand stipend increases hospitals can no longer afford. One way devised to prevent this is a cost savings program where specialists and hospital administrators jointly decide methods to conserve resources and create funding necessary for on-call stipends. Less expensive stipends have been developed based on tiers for taking call above a certain set number. To implement stipends, data relating to on-call services required by each specialty is needed in order to reduce negotiation time and support decision making.

Productivity-dependent on-call payments to trauma physicians delivers fixed payments for services given to patients with no assigned physician. Using this method, payment is available regardless of patient pay status. The foundation for this approach involves physicians' signing over accounts receivable accrued while on-call in exchange for regular payments. Hospitals are responsible for shortages between reimbursement and collections, so facilities have to accurately project expenses and revenue to develop a manageable on-call specialist payment rate.

Stipends along with productivity based payments combine two methods of on-call physician incentives. Physicians obtain standard stipends for being on-call when not contacted. When contacted, on-call doctors receive pay based on productivity. It is imperative that hospitals decide which on-call payment methods will work best for them as determined from proper fiscal research. Facilities can then make arrangements with physicians via a formal legal contract, if on-call compensation is deemed necessary by the institution (American College of Emergency Physicians, 2005).

Another way to retain on-call doctors may be through improving efficiency in the emergency room. Specialists have process and informational hurdles that slow down their evaluations considerably. To expedite these steps, identification of time for calls regarding emergency versus urgent patients must be done. For example, non-complicated fractures can be discharged. All cases may then be scheduled for consultation during the next day by an orthopedist rather than calling this specialist into the emergency room for each patient. Specialist could also be given an in-house customer service representative to work on process and hospital administration issues. Clinical support specialists streamline on-call physician total workload. Some hospitals have what they call Mid-level provider (MLP) first responders. These types of programs can reduce on-call presence of specialist doctors by up to 80%. Mid-level provider first responders take first on-call contact for the specialists and consult with emergency room patients. They evaluate patients, prep them for treatment, and present them to attending emergency room staff. Training across many disciplines such as trauma, orthopedics, and neurosurgery can be given to obtain the most value from MLP first responders (American College of Emergency Physicians, 2005).

## Structure

Reorganization of the trauma system should be considered to improve efficiency and effectiveness and conserve limited financial resources. Evaluation of the regional structure, with consideration of other states' successful organizations, could be useful. If a regional system is determined to be the best structure, regions could be reorganized so that each has a Level I or II trauma center. Trauma physicians at Level I or Level II trauma centers could also be the primary or only specialists eligible for uncompensated care reimbursement.

One southern state, North Carolina, has designed its trauma system in this manner. The Office of Emergency Medical Services (OEMS), as legislated in 1993, is the entity responsible for designing and implementing the statewide trauma system. North Carolina also has a State Trauma Advisory Committee (STAC) that meets quarterly. Regional Advisory Committees (RAC) have also been formed, but they are structured around Level I or Level II trauma centers and all hospitals in the state are required to establish an affiliation with a RAC. Hospital affiliation with a RAC is defined primarily by clinical referral patterns within the region relative to the Level I or II center. Seven of the eight regions have coordinators funded through a private foundation, the Duke Endowment, totaling \$434,000 annually. Hospital participation in the RAC includes performance improvement and education sessions. Regions are responsible for bioterrorism preparedness and are integral in North Carolina's plan. Therefore, they also receive funds from the HRSA Bioterrorism Grant to perform disaster preparedness (American College of Surgeons, 2004).

Georgia (Georgia Division of Public Health, 2007) and Florida (Florida Department of Health, 2007) are other examples of southern states that have organized their trauma system into regions. Alabama lacks legislative authority to designate trauma centers (Man, Mackenzie, Teitelbaum, Wright, & Anderson, 2005), but the state does have a voluntary, informal trauma system. These and other states may have insights into what structures work best as well as pitfalls that may be avoidable regarding optimally functioning trauma system designs.

## Policy Implications

Proper functioning of the Mississippi Trauma Advisory Committee (MTAC) or similar entity is critical to the further development of the state's trauma system. This body retains the statutory authority to advise the Department of Health and provide technical support in the development of the system. The absence of this Committee has left a void in leadership, strategic planning, and cooperation among the system's stakeholders. The Department of Health needs to work closely with the Governor's Office to secure new appointments to the vacant positions on the EMS Advisory Council from which MTAC members can be selected. It is also advisable that the Department seek a change in the statute to allow Council members to continue to serve until new appointments are made. This change would help preclude large gaps in time where EMS Advisory Council or MTAC positions are vacant.

The MTAC needs to meet regularly and work systematically with stakeholders on continued development of the state's trauma system. The State Board of Health should require regular reports from the MTAC to include recommendations to the State Trauma Plan and Regulations. In the interim, an ad hoc group, such as the Trauma Care Task Force created in 1997, could serve to revitalize trauma system planning and make recommendations to the Legislature regarding the structure of the system.

Policy actions to consider for strengthening the Mississippi trauma care system include the following:

- Modify the statute to allow Trauma Care Advisory Council members whose terms have expired to continue to serve until new appointments are made.
- Re-evaluate the regional structure, reviewing successful organizational arrangements in other states.
- If a regional structure is retained, reorganize the trauma regions so that each region includes at least one Level I or II trauma center and redistribute regional funds accordingly.
- Encourage hospitals to participate in the trauma system at levels commensurate with their capacity, possibly through financial incentives or licensing mechanisms.
- Develop minimum standards for all trauma regions and implement a system for monitoring and evaluating their performance.
- Integrate the trauma system with bioterrorism preparedness planning and funding.
- Monitor the expenditures from the Mississippi Burn Care Fund and if out-of-state providers do not apply for burn care reimbursement, consider incorporating the monies into the Mississippi Trauma Care System Fund.
- Consider proposing legislation to generate more revenue for the Trauma Care System Fund.
- Review the adequacy of the formulas used to distribute Trauma Care System Fund dollars, including the proportions allocated to state and regional administration, to Level IV trauma centers, and to hospitals and physicians for uncompensated care.
- Mandate or contractually obligate all hospital emergency rooms caring for trauma patients to submit trauma registry data.
- Improve analytical capabilities of the trauma registry data system and provide reports to trauma regions and participating providers.
- Work with individual trauma centers to measure and improve accountability based on data.

- Provide regular reports on the performance of trauma regions to the State Board of Health using trauma system data.
- Link pre-hospital EMS database to trauma registry data for a comprehensive overview of trauma care.
- Research best practices in recruiting and retaining trauma physicians, nurses, and trauma support staff and implement promising practices.
- Increase trauma educational opportunities for physicians, nurses, and support staff.
- Ensure coordination of critical Emergency Medical System (EMS) pre-hospital compliance and communications regarding trauma patient transfers.
- Standardize inter-hospital transfer arrangements, develop specific policies regarding patients to transfer, and monitor emergency department compliance.
- Use transfer protocols to reduce unnecessary transfers from lower level trauma centers.
- Ensure transfer of patients in an equitable manner to avoid “dumping” of unwanted patients.

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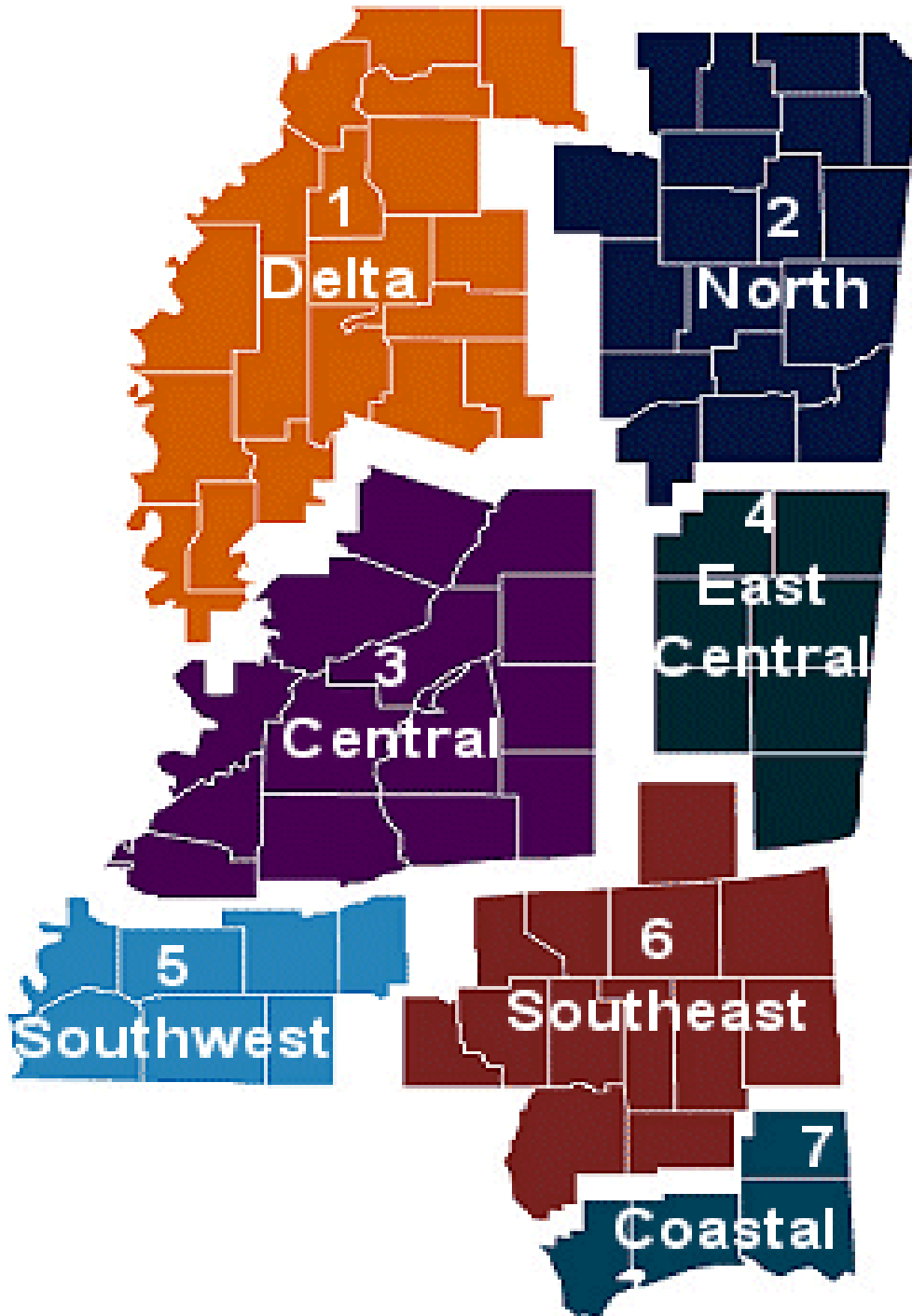
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■ Appendix A

**MS Trauma Region Map**



Source: EMS Annual Report, Mississippi Department of Health, 2005

## ■ Appendix B

### **Hospitals Participating in the Mississippi**

#### **Trauma Care System**

##### **Level I**

Regional Medical Center at Memphis- Memphis, Tennessee, Trauma Region 1

University of Mississippi Medical Center- Jackson, Mississippi, Trauma Region 3

##### **Level II**

Baptist Memorial Hospital Golden Triangle- Columbus, Mississippi,  
Trauma Region 2

Delta Regional Medical Center- Greenville, Mississippi, Trauma Region 1

Forrest General Hospital- Hattiesburg, Mississippi, Trauma Region 6

North Mississippi Medical Center- Tupelo, Mississippi, Trauma Region 2

##### **Level III**

Baptist Memorial Hospital- Oxford, Mississippi, Trauma Region 2

North Mississippi Medical Center Clay County- West Point, Mississippi,  
Trauma Region 2

Ocean Springs Hospital- Ocean Springs, Mississippi, Trauma Region 7

Oktibbeha County Hospital- Starkville, Mississippi, Trauma Region 2

Singing River Hospital- Pascagoula, Mississippi, Trauma Region 7

South Central Regional Medical Center- Laurel, Mississippi, Trauma Region 6

##### **Level IV**

Alliance Healthcare- Holly Springs, Mississippi, Trauma Region 1

Alliance Laird Hospital- Union, Mississippi, Trauma Region 4

Baptist Memorial Hospital- Booneville, Mississippi, Trauma Region 2

Baptist Memorial Hospital DeSoto- Southaven, Mississippi, Trauma Region 1

Baptist Memorial Hospital Union County- New Albany, Mississippi,  
Trauma Region 2

Biloxi Regional Medical Center- Biloxi, Mississippi, Trauma Region 7

Bolivar Medical Center- Cleveland, Mississippi, Trauma Region 1

Calhoun Health Services- Calhoun City, Mississippi, Trauma Region 2

**Level IV (cont.)**

Choctaw County Medical Center- Ackerman, Mississippi, Trauma Region 2  
Choctaw Health Center- Philadelphia, Mississippi, Trauma Region 4  
Claiborne County Hospital- Port Gibson, Mississippi, Trauma Region 3  
Covington County Hospital- Collins, Mississippi, Trauma Region 6  
Field Memorial Hospital- Centreville, Mississippi, Trauma Region 5  
Franklin County Memorial Hospital- Meadville, Mississippi, Trauma Region 5  
Garden Park Hospital- Gulfport, Mississippi, Trauma Region 7  
George County Hospital- Lucedale, Mississippi, Trauma Region 7  
Greenwood Leflore Hospital- Greenwood, Mississippi, Trauma Region 1  
Grenada Lake Medical Center- Grenada, Mississippi, Trauma Region 1  
Gulf Coast Medical Center- Biloxi, Mississippi, Trauma Region 7  
Hancock Medical Center- Bay St. Louis, Mississippi, Trauma Region 7  
Hardy Wilson Memorial Hospital- Hazlehurst, Mississippi, Trauma Region 3  
H. C. Watkins Memorial Hospital- Quitman, Mississippi, Trauma Region 4  
Jefferson Davis Community Hospital- Prentiss, Mississippi, Trauma Region 6  
King's Daughters Medical Center- Brookhaven, Mississippi, Trauma Region 5  
Lackey Memorial Hospital- Forest, Mississippi, Trauma Region 3  
Lawrence County Hospital- Monticello, Mississippi, Trauma Region 5  
Leake Memorial Hospital- Carthage, Mississippi, Trauma Region 3  
L. O. Crosby Memorial Hospital- Picayune Mississippi, Trauma Region 6  
Madison County Hospital- Canton, Mississippi, Trauma Region 3  
Magnolia Regional Health Center- Corinth, Mississippi, Trauma Region 2  
Marion General Hospital- Columbia, Mississippi, Trauma Region 6  
Memorial Hospital- Gulfport, Mississippi, Trauma Region 7  
Montfort Jones Memorial Hospital- Kosciusko, Mississippi, Trauma Region 3  
Natchez Community Hospital- Natchez, Mississippi, Trauma Region 5  
Natchez Regional Medical Center- Natchez, Mississippi, Trauma Region 5  
Neshoba County Hospital- Philadelphia, Mississippi, Trauma Region 4  
Newton Regional Hospital- Newton, Mississippi, Trauma Region 4  
North Mississippi Medical Center- Iuka, Mississippi, Trauma Region 2  
North Sunflower County Hospital- Ruleville, Mississippi, Trauma Region 1  
Northwest Mississippi Regional Hospital- Clarksdale, Mississippi,  
Trauma Region 1  
Perry County Hospital- Richton, Mississippi, Trauma Region 6  
Pioneer Health Services- Aberdeen, Mississippi, Trauma Region 2  
Pontotoc Health Services- Pontotoc, Mississippi, Trauma Region 2  
Quitman County Hospital- Marks, Mississippi, Trauma Region 1

**Level IV (cont.)**

Rankin Medical Center- Brandon, Mississippi, Trauma Region 3  
Riley Hospital- Meridian, Mississippi, Trauma Region 4  
River Oaks Hospital- Flowood, Mississippi, Trauma Region 3  
River Regional Medical Center- Vicksburg, Mississippi, Trauma Region 3  
Scott County Hospital- Morton, Mississippi, Trauma Region 3  
South Sunflower County Hospital- Indianola, Mississippi, Trauma Region 1  
Stone County Hospital- Wiggins, Mississippi, Trauma Region 6  
Tallahatchie General Hospital- Charleston, Mississippi, Trauma Region 1  
Tippah County Hospital- Ripley, Mississippi, Trauma Region 2  
Tri-Lakes Medical Center- Batesville, Mississippi, Trauma Region 1  
Tyler Holmes Memorial Hospital- Winona, Mississippi, Trauma Region 1  
University Hospitals and Clinics- Lexington, Mississippi, Trauma Region 3  
Walthall County Hospital- Tylertown, Mississippi, Trauma Region 6  
Wayne County Hospital- Waynesboro, Mississippi, Trauma Region 6  
Winston Medical Center- Louisville, Mississippi- Trauma Region 4

Source: EMS Annual Report, Mississippi Department of Health, 2005

## ■ Appendix C

### **Trauma System Designation Guidelines**

#### **Trauma Center Application Process**

All/any Mississippi licensed hospitals with a functioning emergency room may apply for trauma center designation. The applicant hospital does not have to be within an active trauma care region to obtain designation; however, the department may prioritize the designation process for hospitals located within and participating as a member of a designated trauma care region.

Note: State funding for indigent trauma care is available only to designated trauma center hospitals which are actively participating in a designated trauma care region.

To receive state designation as a Trauma Center, any applicant hospital and its medical staff shall set forth such intention in a letter to the department accompanied by two completed copies of the department's "Application for Trauma Center Designation".

Within 30 days of receipt of the application, the Department shall provide written notification to the applicant hospital of the following:

1. that the application has been received by the Department;
2. whether the Department accepts or rejects the application;
3. if accepted, the date scheduled for hospital inspection;
4. if rejected, the reasons for rejection and a deadline for submission of the corrected "Application for Trauma Center Designation" to the Department.

#### **Trauma Center Inspection Process**

The Department shall provide for the inspection of the applicant hospital, provided that its application has been formally approved by the Department, on the date scheduled and indicated in the Department's acceptance letter to the applicant hospital, unless:

- a. the Department provides written notification with justification of change to the applicant hospital 14 days prior to the inspection date; or
- b. the applicant hospital provides written request with justification for a change to the Department 30 days prior to the inspection date;
- c. the Level IV hospital applicant does not require an on-site inspection.

An applicant hospital may request an initial "Consultative Review" of its facilities. Such a review is used to assist the applicant hospital in preparation for a Trauma Center inspection.

Results of Trauma Center Consultative Reviews will be provided by the Department in writing to each applicant hospital. These results will be held in confidence by the Department. The Department will work with and provide assistance to the applicant hospital to correct any deficiencies noted during the Consultative Review.

If an applicant hospital requests a Trauma Center inspection without having first received a Consultative Review and said hospital fails to meet designation criteria the inspection shall be deemed a Consultative Review.

A Consultative Review, regardless of outcome, confers no designation status upon said applicant hospital.

A hospital, having completed a Consultative review, may apply for a Trauma Center inspection at any time after receiving the Report of Survey from the Consultative Review.

Results of Trauma Center inspections will be provided by the Department in writing to each applicant hospital. Details related to hospital's inspection will be considered confidential and will not be released.

Each applicant hospital, which fails to meet the requirements for Complete Designation as a Trauma Center, shall submit to the Department a "Plan of Correction" within thirty (30) days. The Plan shall address each of the deficiencies noted by the inspection team and outline a corrective process and timeline for completion. Upon acceptance by the Department of the "Plan of Correction" and concurrence by the inspection team, the hospital shall receive "Provisional Designation" as a Trauma Center. "Provisional Designation" qualifies the hospital to participate in all aspects of the State and Regional trauma systems with the exception of allocated funds. Hospitals and participating Physician, except as described below, "Provisionally Designated" will receive 50% of their normally allocated funds until such time as they become Completely Designated.

Upon receipt of notice of "Provisional Designation" the hospital will have not more than fifteen (15) months to complete and fully implement the "Plan of Correction." During this period of time the Department will work with and provide assistance to the hospital in the implementation of their "Plan of Correction."

The hospital is responsible for contacting the Department to request a "Focused Survey" at any time prior to the end of fifteen (15) months by the Department.

Upon such a request the Department shall assemble a survey team to review the hospitals' "Plan of Correction" for complete implementation. If the Focused Survey team deems the "Plan of Correction" fully implemented the hospital will receive complete trauma Center designation. Failure to pass the "Focused Survey" does not extend the original fifteen (15) month time period.

Failure to fully complete and implement the "Plan of Correction" within the fifteen (15) month period shall result in the automatic lapse of the "Provisional Designation" and the hospital will automatically return to its' original non-designated status. If the "Provisional Designation" status lapses the hospital shall not be eligible for any allocated trauma funds.

Those hospitals not demonstrating complete implementation of their plan of correction during the focused survey, for the sole reason that they have not met the specialty physician requirements, due to the loss of one or more specialty physicians, will receive a continuing "Provisional Designation."

The facility must report to the Office of Emergency Planning and Response (OEPR) any loss of 24-hour specialty physician coverage that is required within the Trauma Care Regulations. The facility must provide a plan of corrections that details how the facility will become compliant.

If the sole reason a facility receives "Provisional" status is due to the lack of specialty physician coverage, the facility will continue to receive 100% of the trauma funds allotted for uncompensated patients. The hospital must submit to the DEMS evidence of recruiting efforts. Such evidence must be determined appropriate by the Mississippi Trauma Advisory Committee (MTAC). This "Provisional Designation" may continue for a period not to exceed three (3) years.



In the event a hospital is unable to fulfill their physician requirement at the end of three (3) cycles, the hospital will have its' Trauma Center Level status reduced to the next lowest, most appropriate, level.

No inspection or designation process provided by any other agency, organization or group maybe substituted in lieu of the Department's.

### **Trauma Center Inspection Teams**

The Department shall provide multidisciplinary teams for all Trauma Center inspections.

Trauma Center Inspection Teams shall consist of disciplines as follows:

#### **1. Level I and II Trauma Centers**

As a minimum, teams shall consist of the following representative disciplines: trauma surgeon, emergency physician, a person knowledgeable in trauma center administration, and trauma nurse (The Department may add additional team members as it deems necessary.) All members of teams for Levels I and II shall reside and practice outside the State of Mississippi.

#### **2. Level III Trauma Centers**

As a minimum, teams shall consist of the following representative disciplines: trauma surgeon; emergency physician; and trauma nurse. One member of each team for Level III must reside and practice out of the state of Mississippi. The remaining two members may reside and practice in Mississippi, however, they may not practice or reside in any hospital or area of the trauma care region in which the applicant hospital is located.

#### **3. Level IV Trauma Centers**

The Level IV trauma center inspection process shall consist of a review of the completed trauma center application, compliance with all of the "Essential" elements listed in the Mississippi Trauma Care Regulations' Essential and Desirables Chart, and satisfactory review of specific trauma registry data reports as identified in the trauma center application. These documents shall be reviewed off-site by the OEPR Trauma System Development staff. If the information contained in the completed application and the trauma registry data reports do not demonstrate compliance with the Mississippi Trauma Care Regulations, there will be a request for additional information and an opportunity to supply supplementary data/information for review. If this additional information does not demonstrate compliance with the Mississippi Trauma Care Regulations, an on-site survey inspection will be scheduled. At a minimum, the on-site team shall consist of one member of the Trauma System Development staff and one of the following representative disciplines: a physician or trauma nurse. The member of the inspection team that is not Trauma System Development staff may reside and practice in Mississippi, however; they may not practice or reside in any hospital or area of the trauma care region in which the applicant hospital is located.

### **Length of Trauma Center Designation**

The department shall designate Trauma Centers for a period not to exceed three (3) years. Complete designations shall remain active for three years provided no substantive changes or variances have occurred and that the designated Trauma Center continues to comply with all rules and regulations of the Department after receipt of the Trauma Center designation by the department. The Department may perform periodic trauma center audit/reviews at each designated Trauma Center.

Designated Trauma Centers may request designation by the Department at a level higher or lower than its current designation prior to the expiration date of that designated Trauma Center by following the processes outlined in 15.1 and subsequent sections.

### **Trauma Center Designation Renewals (redesignation)**

Designated Trauma Centers shall provide written notification to the Department regarding redesignation (6 months prior to the designation expiration date) of its intent to seek or not seek redesignation or designation at a level different from its original designation level. The Department will acknowledge receipt of such notification in writing within 30 days to the applicant hospital and begin the application process as provided in 15.1 and subsequent sections.

### **Process of Appeal for Failing Trauma Center Inspection**

If a hospital fails a trauma center inspection, the hospital shall have 30 days from the date of notification of the failure to appeal the decision in writing to the Department. The Department shall make a determination within three months of receipt of the appeal. The Department will provide the hospital with a written report of its decision. If the decision of the Department is unfavorable to the hospital, the hospital may request to be inspected for trauma center designation at another level but must pay all cost associated with the request.

### **Categories of Trauma Center Designation**

#### **1. Complete Designation**

The hospital has completed all of the requirements for designation at their application level. This is a three (3) year designation subject to periodic compliance audits.

#### **2. Provisional Designation**

The hospital has completed all of the requirements for Complete Designation at their application level with the exception of minor (no patient or Regional operations impact) deviation(s). This designation category may be used for initial designations or an interim change in status from Complete Designation due to a temporary loss of a capacity or capability.

Any hospital receiving written notification of Provisional Designation must immediately notify the Trauma Care Region and submit to the Department within thirty (30) working days from the receipt of notification a written plan of correction and an interim operations plan including time lines. The Department, upon receipt, shall either approve or disapprove the plan within thirty (30) working days. Upon receipt of notice of "Provisional Designation" the hospital will have not more than fifteen (15) months to complete and fully implement the "Plan of Correction." The hospital is responsible for contacting the Department to request a "Focused Survey" at any time prior to the end of fifteen (15) months by the Department. Upon such a request the Department shall assemble a survey team to review the hospitals' "Plan of Correction" for complete implementation. If the Focused Survey team deems the "Plan of Correction" fully implemented the hospital will receive complete trauma Center designation.

### 3. Suspended Designation

The hospital has completed the requirements for Complete Designation at their application level. However, upon receipt of information and verification by the Department of regulation violations and a determination by the Department that it is in the best interest of patient care or Regional operations, the Department may temporarily suspend the Trauma Center Designation for said hospital.

Any hospital receiving notice of Suspension of their Trauma Center Designation, shall, immediately notify the Trauma Care Region and all prehospital providers who routinely transport trauma patients to said hospital of the suspension of their Trauma Center designation. Any hospital receiving notice of suspension of their Trauma Center Designation shall no longer be permitted to act as nor be permitted to hold themselves out as a Designated Trauma Center.

Further, the hospital shall, within ten (10) working days of notification of said suspension submit a written plan of correction, including correction time lines to the Department. Upon receipt of said plan the Department shall either approve or disapprove the plan within ten (10) working days.

Upon completion of the Plan of Correction, the hospital shall notify the Department and request a verification visit. The Department shall conduct a focused survey of the hospital to verify completion of the Plan of Correction and compliance with regulations. The Department may, subsequently, reinstate the hospital to its original Trauma Center status.

### 4. Non-Designated Trauma Centers

Any hospital that has not completed the Trauma Center Application Process or who has had their Trauma Center Designation revoked by the Department will be considered a Non-Designated Trauma Center. Such facilities shall not advertise nor hold themselves out to the public as a Designated Trauma Center.

Hospitals who have been designated as Trauma Centers may have their designation status revoked for any of the following reasons:

- a. By the State Health Officer for reasons of serious threat or jeopardy to patients health or welfare;
- b. Refusal to satisfactorily complete the reinstatement process, described above, for hospitals having had their Trauma Center Designation Suspended.
- c. Hospitals having their Trauma Center Designation status revoked may reapply for trauma center designation after resolution of all issues related to the revocation and completion of a complete new trauma center designation process.

Appendix D

Mississippi's Status for Emergency Medicine in 2006

MISSISSIPPI

OVERALL GRADE  
**C-**

NOTE: The following data for Mississippi reflect the state's support of its emergency care system before the devastation by Hurricane Katrina.

Overall Grade: <b>C-</b>
Access to Emergency Care: <b>C</b>
Quality and Patient Safety: <b>C+</b>
Public Health and Injury Prevention: <b>D-</b>
Medical Liability Environment: <b>D-</b>

**MISSISSIPPI COMPARED WITH THE NATION:** Mississippi received a C- overall grade, ranking below the national median, for its support of an emergency care system to meet the needs of its residents. The state received low marks in *Public Health and Injury Prevention* and *Medical Liability Environment*, and average marks in *Access to Emergency Care* and *Quality and Patient Safety*.

**PROBLEMS:** Mississippi ranked 50th for its number of annual emergency visits per board-certified emergency physician and 46th for its number of board-certified emergency physicians per 100,000 people.

Mississippi's lack of seat belt law enforcement contributed to its poor grade in *Public Health and Injury Prevention*. The state ranked last in traffic fatalities per 100,000 licensed drivers, and in the bottom 10 percent for its percentage of fatalities in which no restraint was used (47th) and for its total fatalities in alcohol-related crashes per 100,000 people (47th). Mississippi also scored poorly in its immunization rates.

Mississippi received credit for its \$500,000 cap on non-economic damages in medical liability lawsuits, but it ranked very poorly compared with other states for past increases in medical liability insurance rates. The new cap likely will temper future increases, leading to a better future score.

**GOOD NEWS:** Mississippi appears to have adequate facilities for a first-class health care system. The state ranked 3rd in the nation for its number of hospital-staffed beds per 1,000 people, 4th for its trauma centers per 1 million people, and 10th in the number of emergency departments per 1 million people.

**RECOMMENDATIONS:** Mississippi needs to attract more board-certified emergency physicians, enact a primary seat belt law, and improve its immunization rates. Lowering its cap on non-economic damages would not only improve its *Medical Liability Environment* score, but also would help attract new physicians needed to improve *Access to Emergency Care*.

ACCESS TO EMERGENCY CARE	<b>C</b>
<ul style="list-style-type: none"> <li>Number of EDs per 1 million people: 29.62</li> <li>Annual ED visits per board-certified emergency physician: 12,679</li> <li>Board-certified emergency physicians per 100,000 people: 4.34</li> <li>Number of registered nurses per 1,000 people: 8.57</li> <li>Number of hospital-staffed beds per 1,000 people: 3.96</li> <li>Annual per capita expenditure on hospital care: \$1,551</li> <li>Percent of population that does not have health insurance: 17.90%</li> <li>Annual payments per fee-for-service enrollee in Medicare: \$5,896</li> <li>Annual state Medicaid expenditures per population younger than 65: \$264</li> <li>Annual SCHIP state contribution per 100 children younger than 18 years of age: \$1,870.50</li> <li>Trauma centers per 1 million people: 22.05</li> </ul>	

QUALITY AND PATIENT SAFETY	<b>C+</b>
<ul style="list-style-type: none"> <li>Emergency medicine residents per 1 million people: 9.65</li> <li>Emergency medicine residency programs: 1</li> <li>Percent of population with access to advanced life support ambulance services: 98.0%</li> <li>Percent of pre-hospital personnel with access to online medical direction: 100.0%</li> <li>Percent of population with access to Enhanced 911 services (location identification from where the call is placed): 90.0%</li> <li>Use of CDC Preventive Health and Health Services Block Grants for emergency medical services: No</li> <li>Is training offered statewide to hospital personnel for response to: (a) disasters, (b) biological attacks, and (c) chemical attacks? Yes, Yes, Yes</li> <li>Are hospitals required to submit data on diversions? No</li> </ul>	

# MISSISSIPPI



PUBLIC HEALTH & INJURY PREVENTION	D-
<p><b>Automobile safety:</b></p> <ul style="list-style-type: none"> <li>• Does the state have primary seat belt law enforcement? No</li> <li>• Traffic fatalities per 100,000 licensed drivers: 46.18</li> <li>• Percent of fatalities in which no restraint was used: 67.2%</li> <li>• Total fatalities in alcohol-related crashes per 100,000 people: 11.02</li> <li>• Alcohol-related fatalities as a percentage of all traffic fatalities: 37%</li> <li>• Helmet use required for all motorcycle riders? Yes</li> <li>• Substance abuse clients in specialty treatment units (per 100,000 people): 234.5</li> </ul> <p><b>Immunization:</b></p> <ul style="list-style-type: none"> <li>• Percent of children aged 19-35 months who are immunized (2002-2003): 78%</li> <li>• Percent of adults aged 65 and older who received a flu vaccine in the last 12 months: 63.0%</li> <li>• Percent of adults aged 65 and older who have ever received a pneumococcal vaccine: 58.9%</li> <li>• Percent of live births with early prenatal care (beginning in the first trimester): 82.6%</li> <li>• Fatal occupational injuries per 1 million people: 34.45</li> </ul> <p><b>Unintentional Injury Prevention Programs:</b></p> <ul style="list-style-type: none"> <li>• Fall prevention program: No</li> <li>• Fire-related injury prevention program: Yes</li> <li>• Child safety seat non-users intervention program: No</li> </ul> <p><b>Intentional Injury Prevention Programs:</b></p> <ul style="list-style-type: none"> <li>• State law enforcement special unit or designated personnel to address: (a) domestic violence: No</li> <li>• State law enforcement special unit or designated personnel to address: (b) child abuse: No</li> <li>• Intimate partner violence and sexual violence prevention program: No</li> <li>• Violence prevention program for high-risk youth: No</li> </ul>	

MEDICAL LIABILITY ENVIRONMENT	D-
<p><b>Caps on non-economic damages:</b></p> <ul style="list-style-type: none"> <li>• \$250,000 cap on non-economic damages: No</li> <li>• \$250,001 - \$350,000 cap on non-economic damages: No</li> <li>• \$350,001 - \$500,000 cap on non-economic damages: Yes</li> <li>• Any cap on non-economic damages: No</li> </ul> <ul style="list-style-type: none"> <li>• Liability protection for emergency care: No</li> <li>• Pretrial screening panels: No</li> <li>• Expert witness rules: No</li> <li>• Joint liability reform: Yes</li> <li>• Collateral source reform: No</li> <li>• Patient compensation fund: No</li> <li>• Increase in physicians' medical liability insurance rates (2001-2004): 197.56%</li> <li>• Increase in specialists' medical liability insurance rates (2001-2004): 149.27%</li> </ul>	

**For more information and media contacts about the National Report Card on the State of Emergency Medicine, go to [www.acep.org](http://www.acep.org).**

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