Mississippi Trauma Care System

Performance Improvement and Patient Safety Plan

2018

Table of Contents

EXECUTIVE SUMMARY

The Mississippi State Department of Health (MSDH) in following its responsibility for creating, implementing and managing the statewide trauma care system is designated as the lead agency for trauma care system development. At the direction of the Emergency Services Act, the MSDH develops and administers trauma regulations that include, but are not limited to, the Mississippi Trauma Care System Plan, trauma system standards, trauma center designations, field triage, inter-facility trauma transfer, pediatric trauma care, burn care, trauma data collection, trauma care system evaluation and management of state trauma system funding. The regulations were developed through a consensus process with the advice of nationally recognized trauma system consultants, the Mississippi Trauma Advisory Council (MTAC) and the staff of MSDH.

The State Legislature, MSDH, and MTAC have an ultimate goal of getting *the right patient to the right hospital in the right time.* MTAC in consultation with the MSDH through the American College of Surgeons Committee on Trauma has set forth the requirement for a performance improvement methodology and plan that incorporates continuous measurement and improvement for the system, the regions, the pre-hospital encounter and the hospitals (local trauma centers).

The purpose of this plan is to provide emergency medical services (EMS), trauma centers, trauma regions, and the State trauma program with a summary of the processes and activities required to measure, monitor, evaluate, and improve the process of trauma care and its outcome. The plan shall address each component's responsibility surrounding the following description: An overview of trauma systems PIPS is provided to summarize the key points relative to the state system and its components.

Each component is addressed relative to:

- The purpose and goals for PIPS, Performance Improvement and Patient Safety
- Structure and responsibilities
- Data collection and validation processes
- Scope of review and key activities
- Evaluation processes including how to identify improvement opportunities and implement corrective action and
- How information should be documented and reported.

Prioritization of plan implementation shall be as follows:

- Establishment in statute comprehensive protection of confidentiality
- Adoption and evaluation of state trauma field guidelines
- Collection and validation of data variables

- Provision of education to all trauma centers
- Establishment of a continuous process and structure for conduction performance improvement

Maintaining an understanding of the distinct challenges that affect the diverse regions and hospitals is critical to the success and continual development of the process and plan.

INTRODUCTION

A systems approach to trauma care provides the best means to protect the public from premature death and prolonged disability. Trauma systems reduce death and disability by identifying causes of injury and promoting activities to prevent injury from occurring, and by assuring that the resources required for optimal care are available. A major goal of trauma care systems is to provide care that is efficacious, safe, and cost-effective.

Performance Improvement and Patient Safety (PIPS) in an organized trauma system consists of multiple layers of continuous monitoring and evaluation of care to identify opportunities for improvement. This progressive cycle of evaluation extends from the performance improvement (PI) programs of hospitals and emergency medical services (EMS) agencies to review committees established at the state and regional levels, and evaluation programs within the MSDH including the Mississippi Trauma Registry (MTR).

This model emphasizes a continuous, multidisciplinary, multi-layered effort to monitor, measure, assess, and improve the process and outcomes of trauma care. Regardless of the hospital, service, or region, care processes and the clinical management of trauma patients must be evaluated using an established methodology with pre-defined measures based on national or state recognized standards. This review should include comparison and benchmarking of services, hospitals, and regions with state or national data obtained through trauma registries, mortality studies, and outcomes-related research.

This plan was developed to assist and guide trauma committees responsible for PIPS within agencies, institutions, or regional and state systems. Each section provides PIPS advice for each level of responsibility and is written to stand separately as a guide for that level. As a result, there is some duplication of information throughout the manual. The appendices offer explicit examples and language for PIPS activities which may be adapted. Adhering to the processes described will provide a foundation for a successful trauma center and system PIPS program but is not considered a replacement for a consensus process under the direction of a Trauma Medical Director and Trauma Program Manager.

Other resources to consult as efforts to implement trauma PI statewide evolve include:

- "PIPS Reference Manual" (www.facs.org/trauma/handbook - ACS 2002)
- "Resources for Optimal Care of the Injured Patient" (ACS 2014)
- Advanced Trauma Life Support Manual (ATLS)
- Evidenced based practice guidelines or reviews
- American College of Surgeons (www.facs.org/education/ebrs)
- Eastern Association for the Surgery of Trauma (EAST; www.east.org)
- US Department to Health and Human Services
- Agency for Healthcare Research and Quality (Evidenced-based Practice Program; www.ahrg.gov)
- National Guideline Clearinghouse (www.guideline.gov).

Together with this plan, the advice of those resources should result in activities necessary for improving trauma care locally, regionally, and state-wide. Seeking the regular advice of professionals with expertise in trauma PI is strongly recommended to assure that PIPS processes meet contemporary theory and comply with State law governing protection of clinical care review.

It is acknowledged that modifications and adaptations of this model will occur to allow for the unique characteristics of trauma care provision in each MS Trauma Care Region.

PERFORMANCE IMPROVEMENT AND PATIENT SAFETY OVERVIEW

PURPOSE AND GOALS

The purpose of trauma system performance improvement and patient safety (PIPS) is to measure, evaluate, and improve the processes and outcome of care rendered by all phases and levels of the trauma care continuum from 9-1-1 dispatch through rehabilitation. A PIPS plan establishes lines of communication, structure, authority and accountability for monitoring system components and aspects of care, and defines standards by which performance and outcomes are measured. The primary objective of trauma system PI is to decrease unnecessary death and disability by reducing inappropriate variation in care, maintain a conscious level of costs and efficiency and assure that system expectations, standards, and benchmarks are met. An effective PI program results in implementation of plans for corrective action or improvement when indicated and modification of practice guidelines or the trauma plan when appropriate.

The specific goals of the Mississippi Trauma System PIPS program are to:

- Alleviate unnecessary death and disability from trauma by reducing inappropriate variation in care and improving patient care practices.
- Promote optimal trauma care by performing ongoing cycles of evaluation of trauma care delivery and system components, and implementing improvement initiatives based on optimal care practices when indicated.
- Provide independent, objective evaluation of the Mississippi Trauma Care System, from pre-hospital through rehabilitative care.

STRUCTURE

The trauma system PIPS process consists of internal (local institution or agency) and external (system) monitoring and evaluation of care by trauma care providers (pre-hospital and hospital), regional trauma advisory bodies and the lead agency with authority to oversee the trauma system. Internal monitoring and evaluation occurs within the hospital or pre-hospital agency, while external review occurs at the regional or state PI committee level with oversight provided by the Mississippi State Department of Health (MSDH).

GOVERNING AGENCY

The MSDH is the governing agency authorized by MS CODE §41.59.5 to develop and oversee a comprehensive, statewide trauma system. The MSDH has legal authority to monitor, evaluate, and improve processes of trauma care and outcomes throughout the state. The MSDH collaborates with MTAC for overall responsibility. Together they are responsible for:

- Developing a comprehensive, statewide process to monitor, evaluate, and improve trauma system performance, as a whole and by its regions.
- Establishing pre-defined measures or expectations of care based on evidence based guidelines, state policy and standards, or derived out of consensus.
- Providing direct oversight and administration of PIPS activities of the state and regional trauma PI committees.
- Implementing corrective action strategies or initiatives based on the PIPS committee's findings and recommendations. MSDH may empower the regional trauma PIPS committee to implement improvement initiatives that are not regulatory in nature such as evidenced-based practice guidelines.
- Communicating problems, trends, and issues identified by the state and regional PIPS committees to the responsible entity such as ambulance services, healthcare organization, other agencies, county health officials, etc. Communication of PIPS activities may be delegated to the regional PIPS committee given that the MSDH provides oversight.
- Initiating action required to avert a potential emergent public health risk.

- Collecting, evaluating, validating, and communicating trauma data.
- Developing and enforcing policies and procedures for data security and confidentiality protection for all aspects of the state PIPS program.

STATE TRAUMA PIPS COMMITTEE

The State Trauma PIPS Committee is appointed by the State Health Officer (SHO) of MSDH. The Committee shall meet in closed session. The committee is independent from the MTAC and EMSAC, and the membership is comprised of the following representatives:

- Trauma Surgeons: (two), one chair and one vice chair
- Emergency Room Physician: (one)
- Representative from the State EMS PI Committee: (one)
- Member of the Trauma Registry Committee: (one)
- Representative from each Trauma Region: (seven)
- Nursing representative from each Trauma Center Level: (four)
- Representative from the Tertiary Pediatric Trauma Centers: (two)
- Representative from MTAC: (one)
- Representative from the Medical Director Clinical Sub-Committee: (one)
- Burn Representative: (one)
- State EMS Medical Director/Chair of MDTQA: (one)
- TOTAL MEMBERSHIP: 22

Subject Matter Experts (SME) may participate in committee activities appropriate to their expertise. A quorum will be the total members present.

A Trauma Medical Director Clinical Sub-Committee shall be formed made up of all the Regional Trauma Medical Directors which shall review clinical matters related to peer review activities. This subcommittee shall be open to all trauma center medical directors.

RESPONSIBILITIES

The State Trauma PIPS Committee is responsible for establishing pre-defined measures or expectations of care based on evidence based guidelines, state policy and standards, or derived out of consensus. Review at all levels should include comparison and benchmarking of services, hospitals, and region with state or national data obtained through injury databases and trauma registries, mortality studies and outcomes-related research.

The MSDH Bureau of Acute Care Systems - Trauma will provide administrative support to the Trauma PI Committee. All meetings of the Committee, including any sub-committee meetings, are by invitation only and are not open to the public.

MONITORING

The role of the State Trauma PIPS Committee is to oversee and review regional and statewide Trauma PI data for patterns or trends in care processes, evaluate outcomes, and recommend improvement initiatives as indicated by the results. The PI committee reviews trauma data, information reported by the regional PI committees, and pertinent issues or trends that are identified during designation visits. The committee may choose to request focused reviews and expanded study and review to better address problems identified and their root cause.

REVIEW ACTIVITIES

The statewide trauma PIPS program should be capable of objectively reviewing individual patient care as well as identify variations in the processes and outcome of groups of patients. Hospitals and EMS agencies, regions, and the state should be able to effectively monitor compliance with system standards, track variability, and document improvement using aggregate data. Examples include response times, timeliness of care, length of stay, complication and mortality rates, and cost.

Data must be collected on an ongoing basis using sources that are reliable, accessible, and verifiable. Many useful sources are available to perform monitoring and to evaluate the efficacy, cost, and outcomes of trauma care. In addition to State Trauma Registry data, some sources which should be considered for use are:

- Pre-hospital patient care reports (PCR)
- Hospital patient records, i.e., patient care summaries
- Public safety records, i.e., police reports and dispatch records.
- Inter-hospital transfer records.
- Autopsy records, where available.
- External bench-marking data (National Trauma Data Base and other states' Trauma Registry Data).
- Regional PIPS reviews.

There are numerous variables collected by the Mississippi Trauma Registry that can be queried and used to effectively measure and evaluate system performance and outcomes. The data can be used to compare and benchmark performance among EMS providers, hospitals, rehabilitation centers, regions, and the state. The Mississippi Trauma Registry is the primary tool to drive the trauma PIPS process throughout the state. Trauma Registry data can also be used to identify system needs, support policy

and decision-making, target injury prevention, focus education, document costs, and conduct special studies and research.

Developing pre-defined indicators or expectations of care (based on nationally recognized standards, practice guidelines, or consensus, etc.) can be used to identify individual cases that warrant further review as well as to compare and benchmark performance.

Important aspects of patient care are identified by the PIPS committee. The committee determines relevant indicators or expectations that are objective, easily defined, and reliably available for data collection. It is important that expectations and outcomes of care be uniformly defined and applied throughout the state so that comparison and benchmark data is relevant. Differences in levels of service, capacity, and resources can be imbedded into the standards, i.e., BLS, ALS, hospital levels, etc.

The data integrity and validation process is defined and maintained under the *Mississippi Trauma Data Integrity/Validation Guidelines* found under Appendix F. Key metrics for measurement and reporting are located in Appendix C. The flow of this data begins at the pre-hospital and trauma center and flows through the Regions PIPS Committee and State PIPS Committee. Attention and emphasis to certain metrics may result in process analysis and continued metric development as evaluated by individual metric performance. This might happen at any level in the PIPS Committee continuum.

Release of Information

MSDH Bureau of Acute Care Systems - Trauma will develop policies and procedures for dissemination of information to assure that the information released is adequately explained, and does not identify a patient or facility, and does not violate state law. There are two venues for release of PIPS information: Public Information and Professional Research Information.

Release of information to the public and media must be coordinated through the MSDH BACS.

MSDH should anticipate requests for information about trauma care within the state from medical researchers and government agencies. These requests must be received in writing and will be considered on a case-by-case basis. Internal policies and procedures will define MTR data and summary documents that can be made available to requests that meet requirements for medical research.

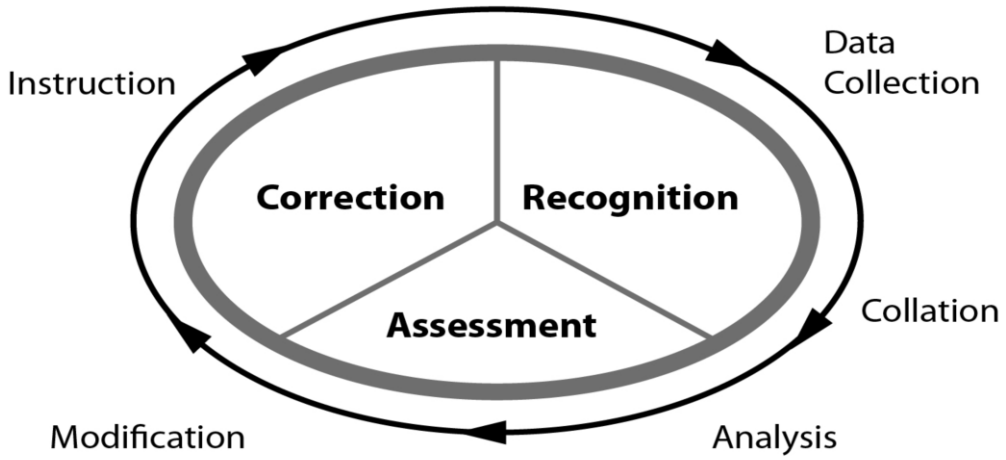
Process of Review

Evaluation of the State PIPS Trauma System shall be performed through collection and analysis of data from the many stakeholders in the trauma system. This data will be

used to evaluate pre-hospital care, definitive care as well as general system issues. The results of data analysis shall be used to develop performance improvement strategies and to assist in trauma research. Both performance improvement and research strategies shall attempt to improve outcomes, provide cost-effective care, and develop trauma prevention strategies.

Following the American College of Surgeons Committee on Trauma, the State Trauma PIPS Committee will follow the methodology for performance improvement and patient safety. This method demonstrates a continuous process of monitoring, assessment, and management directed at improving care (Figure 1). These performance improvement activities are concordant with the Institute of Medicine's six quality aims for patient care: safe, effective, patient centered, timely, efficient, and equitable.

Figure 1. The Continuous Process of Performance



STATE TRAUMA PIPS COMMITTEE REVIEW

MSDH Bureau of Acute Care Systems - Trauma and the State PIPS Committee will jointly monitor and evaluate all aspects of the Mississippi Trauma Care System,

including the causes of injury, emergency response, medical care, cost, and outcomes. These efforts should focus on a process that continuously monitors, assesses, and improves system-wide performance and outcomes. The State PIPS Committee will interpret data, develop performance and outcome measures, establish definitions for collecting and categorizing data (i.e., complications) and create a standardized method for determining opportunity for improvements.

The State PIPS Committee should not duplicate efforts conducted at the regional level, but should focus on issues that impact the entire system. Information obtained by the Trauma registry and other pertinent data sources can be used to objectively evaluate system parameters, track variability, and document improvements. The effectiveness of injury prevention programs, efficacy of care, timeliness of care, access to providers and services, and outcomes are all important aspects of the statewide Trauma Care System that should be routinely monitored and evaluated to identify opportunities to improve care and maximize outcomes.

Improvement Activities and Corrective Action

The primary objective of the trauma system PIPS is to decrease unnecessary death and disability by reducing inappropriate variations in care, and assuring that expectations, standards, and benchmarks are met. When a reoccurring problem, sentinel event, or inappropriate variation occurs, improvement initiatives or actions are developed to increase the effectiveness and efficiency of care and maximize patient outcomes. Examples of corrective strategies include revision of guidelines, protocols, or policies; targeted education; provider counseling; and change in designation.

Documentation and Reporting

Documentation of committee meeting minutes, committee findings, performance reports, mortality and morbidity rates, preventability determinations, and any other information that identifies a provider or patient must be maintained in a manner which protects against discovery or disclosures in accordance with Mississippi law.

An annual report of the state's overall performance, that includes benchmarking accomplishments, complication and mortality rates, disability rates, preventability rates, length of stay, resource utilization, and other measures of outcome, will be prepared jointly by the MSDH Bureau of Acute Care Systems - Trauma and the State Trauma PI Committee. This report should include a description of the state's successes and/or failures in its efforts to improve care and outcomes. Additional interested parties include regional and hospital PIPS committees. Redacted or abstracted versions of the annual report may be prepared for the Legislature.

REGIONAL TRAUMA PIPS COMMITTEE

Each Regional Trauma System should appoint a multidisciplinary committee for the purpose of regional system planning and implementation as well as to perform ongoing PIPS activities of the region. The regional PIPS committee may wish to establish various subcommittees or may choose to take on the task of system monitoring and evaluation at the committee level. Regardless of the configuration, the review committee should include representation from each trauma center (physician and trauma program manager), EMS including 9-1-1 dispatch, non-trauma hospitals, and the county medical examiner/coroner, and air medical service as appropriate. Membership should be established with specified terms of appointment and the Chairman (a physician actively involved in the Trauma program), should be appointed.

The suggested membership includes:

- General surgeon or trauma medical director
- Emergency physician
- Neurosurgeon as available
- Orthopedic surgeon as available
- EMS medical director
- Trauma program manager
- Emergency nurse
- ALS & BLS EMT
- Air medical representative (clinical)
- Subject Matter Experts as appropriate
- Pediatrics Nurse
- Pediatric physician as available
- Trauma Nurse

RESPONSIBILITIES

The regional trauma PIPS committee is responsible for analyzing region-specific trauma data to assess the effectiveness of the regional trauma system in reducing unnecessary death, disability, and cost. In addition, the committee is responsible for addressing regional system issues or concerns and monitoring the availability and use of resources (hospital bypass or service diverts, air ambulance, inter-hospital transfers and transport, etc.). Another key aspect of regional PIPS is the review of mortality cases to determine preventability rates, practice variation, and see improvement opportunities.

MONITORING

The regional trauma PIPS committee is responsible for analyzing region-specific trauma data to assess the effectiveness of the regional trauma system in reducing unnecessary

death, disability, and cost. In addition, the committee is responsible for addressing regional system issues or concerns and monitoring the availability and use of resources (hospital bypass or service diverts; air ambulance, inter-hospital transfers and transport, etc. In addition, the regional committee will review mortality data.

Improvement initiatives that are developed to correct issues or problems are communicated by the Regional PIPS Committee to the appropriate individual or entity for action. The effectiveness of corrective action is evaluated through continuous re-monitoring as the PIPS cycle repeats itself.

The Regional PIPS Committee shall:

- Convene at least quarterly or as directed by state statutes, local ordinance, or committee operating procedures.
- Communicate PI-related information to the designated persons within each treatment setting. For example:
    - Pre-hospital issues will be referred to EMS agency director or designee.
    - Hospital issues will be referred to the trauma program medical director and trauma program manager.
    - Inter-hospital transfer issues will be referred to the responsible persons at both the referring and receiving hospitals.
- Provide an annual report describing trends, problems, improvement opportunities, and recommendations for corrective action to the State PIPS committee.
- Notify the MSDH of high-risk situations where patient safety may be compromised.

REGIONAL TRAUMA PIPS REVIEW

A major objective of trauma systems is to reduce the incidence of injury through injury prevention efforts, and minimize trauma-related death and disability by providing early, optimal care. The effectiveness of injury prevention programs, efficacy of care, timeliness of care, access to providers and services, and outcomes are all important aspects of the regional trauma care system that should be monitored and evaluated to identify opportunities for improvement.

The traditional use of quality indicators to measure the effectiveness of trauma care delivery may have limited value since many do not correlate with outcome. Indicators, however, may be useful for trending incidents, sentinel events, and establishing benchmarks for performance and comparative analysis. They can be used to identify cases for review and may offer an alternative for evaluating process, outcomes, and consistency of care. Indicators or expectations of care should be developed from evidence-based guidelines, critical pathways, protocols, or consensus.

Volume Trending

The trauma patient population as defined by the Mississippi Trauma Registry Inclusion Criteria, Appendix A, will quantify the region's trauma volume. This number will serve as a denominator enabling the Region to monitor injury epidemiology, resource utilization, morbidity and mortality rates, and system needs including services, provider or public education, injury prevention, etc.

Process Measures

The use of process indicators to measure, evaluate, and improve system performance is an important component of the regional trauma PIPS plan. Process expectations can be developed from evidence-based practice guidelines, system protocols, state or regional trauma plans, or committee consensus. There are a number of review aspects that the Region may want to initially focus on, including compliance with established protocols, timeliness and availability of providers or services, availability of facilities and equipment, delays in assessment, diagnosis, or treatment, appropriateness of triage decisions and transport destinations, communications, completeness of documentation, etc. Each performance expectation must be clearly defined, measurable, and obtainable within reason.

Outcome Measures

There are a number of variables that have traditionally been used to measure the outcome of trauma care including morbidity, mortality, length of hospital and intensive care unit stay, utilization of resources and services, cost, functional and cognitive disability, and patient satisfaction.

Mortality Review

All trauma-related deaths occurring within the region's catchment area should undergo internal review process within the Trauma Center using pre-defined criteria to determine preventability. Any provider related mortality, unexpected death (per probability of survival prediction modeling), or challenging or interesting cases should be presented at the regional PIPS committee level in a peer review format.

As discussed earlier, death, complication, and other rates of outcome and preventability determinations should be reported to the State Trauma PIPS Committee using a defined denominator. These can be calculated and trended for each trauma center and pre-hospital care provider within the region, and reviewed annually to determine the need for performance improvement action.

Improvement Activities and Corrective Actions

The primary objective of trauma system PIPS is to decrease unnecessary death and disability by reducing inappropriate variation in care, and assuring that expectations, standards, and benchmarks are met. When a reoccurring problem, sentinel event, or inappropriate variation occurs, improvement initiatives or actions are developed to increase the effectiveness and efficiency of care, and maximize patient outcomes. The action plan should include: who or what is going to change; who is assigned responsibility for problem resolution; what action will be taken and when it will occur; and who is responsible for follow-up and when it will occur. Examples of corrective strategies include the revision of guidelines, protocols, or policies, targeted education, provider counseling, and change in privileges, accreditation, etc.

Documentation and Reporting

Performance improvement and patient safety includes complete, accurate, and confidential documentation of ongoing monitoring, corrective action, progress, and re-evaluation. It is important that the Regional PIPS committee members understand Mississippi law governing PIPS and peer review and take appropriate measures to protect PIPS records and review proceedings from disclosure. A responsible PIPS program assures that information is handled in a strictly confidential manner.

Pre-Hospital Review and Reporting

Pre-hospital trauma PIPS may occur under any number of venues and is inclusive of first responding agencies, ground EMS and aeromedical EMS. Ongoing performance improvement activities should occur within the individual EMS agencies and at the Trauma Care Regions across the state. The Trauma Regions will evaluate the pre-hospital care and how well it compares to the Regional Trauma Plan and integrates with the Designated Trauma Centers within the Trauma Region.

HOSPITAL (TRAUMA CENTER) TRAUMA PIPS COMMITTEE

Performance improvement and patient safety in a trauma center consists of internal and external monitoring and evaluation of care provided by medical, nursing, and ancillary personnel, as well as hospital departments, services, and programs. Due to the diversity of the trauma centers throughout the regions, committee make up varies.

The structure for accomplishing trauma PIPS can be organized in a number of ways depending on the hospital's level of designation, size of medical staff, availability of staff resources, and service volume. In most Level I-III trauma centers, PIPS review is performed by a multidisciplinary trauma committee representing all phases of care provided to the injured patient, including pre-hospital and air medical. In a Level IV trauma facility, the PIPS committee may be comprised of emergency medicine or primary care physicians, who staff the emergency department (ED), as well as the trauma program manager, ED nurse(s), nurse practitioner, physician assistant, mid-level providers, and EMS personnel.

RESPONSIBILITIES

In an organized trauma system, a mechanism for continuous, multidisciplinary review of the processes of care and its outcomes must exist for each level of care if the full benefit of performance improvement is to be realized. Review is conducted by, but not limited to, the EMS provider, the trauma centers, the Trauma Care Regions, and state trauma committees. The performance improvement activities conducted at each level should complement or build upon those performed by others and should include evaluation of:

- Infrastructure such as system response, access to EMS, hospital, and rehabilitation resources, accessibility of services, and availability and efficient use of equipment and other resources such as air medical transport.
- Process of care such as appropriateness of triage and transport, provider assessments, treatment and management decisions, timeliness of care, communication and documentation of treatment.
- Outcomes such as mortality, morbidity, disability, length of stay, utilization of services, cost and patient safety initiatives.

Responsibility for communication of performance issues must be assigned within each level of review. Procedures to ensure confidentiality of the review findings must be in place and be strictly applied. The following summarizes the scope of responsibility for each care review level.

PI review at each level is multidisciplinary, occurs at regular intervals (or soon after a sentinel event), and continuously seeks to identify opportunities for improvement. The

results of analysis define improvement initiatives (if necessary) that are documented and communicated to the appropriate individual or entity for action. The effectiveness of corrective strategies is evaluated as the PI cycle repeats itself.

The trauma center's Performance Improvement and Patient Safety Committee should be created within the context of the hospital's trauma designation. Understanding the variability of centers throughout the state, the committees design and function may differ. However, the operational activities of the committee should follow the designated PIPS activities and metrics. Indicators or expectations of care should be developed from evidence-based guidelines, critical pathways, protocols, or consensus. Injured patients who meet criteria for review should be screened using a pre-established list of expectations of care and reviewed for morbidity and mortality. Cases that warrant further review, such as a provider related morbidity or mortality, should be evaluated by the appropriate trauma or peer review committee using pre-defined criteria so that review is unbiased. Whenever possible, the involved are provider(s) should participate in the presentation and discussion of the case, and assist in developing an effective solution to prevent the problem from reoccurring.

The Trauma Program may use four levels of review. All trauma program operational staff aid in this process. This process remains open and ongoing until event resolution is obtained. In order to support this process, the Trauma Review Taxonomy may be utilized to help guide where opportunities lie and may be found in Appendix C. Models of Performance Improvement may also be utilized to aid in guiding the performance improvement process through the *Trauma Program Performance Improvement Review Process*, Appendix D.

MONITORING

The PIPS committee monitors, evaluates, and corrects care process issues including those external to the trauma program. In addition, a trauma peer review committee representing surgery, emergency medicine, anesthesia, and other appropriate physician sub-specialists may be constituted for the purpose of physician peer review. In small Level III and IV trauma centers physician peer review may be accomplished through an existing hospital peer review committee, the trauma PIPS committee, or an appropriate external review body.

Because trauma care crosses most, if not all, service disciplines, the trauma program and its medical director must be empowered by the hospital's governing body and medical staff to address performance issues that involve multiple services and departments. The trauma medical director must be granted the authority and administrative resources necessary to effectively lead the trauma PIPS process through problem resolution. The trauma program manager (TPM) is an essential component of the PIPS process because he or she is responsible for the day-to-day collection and

processing of data, monitoring care and its outcome, and coordinating the logistical aspects of the PIPS program. The TPM may identify adverse trends in care or processes that are not evident in the individual case review because of his/her oversight role.

The TPM is essential to the functioning of committees, providing coordination of action planning and documentation between the trauma program and the hospital-wide PI program. Committee(s) should consider meeting at least quarterly (monthly or biweekly in larger volume hospitals) to review operational or care process issues (trauma committee), and morbidity, mortality, and sentinel events (peer review committee). Larger trauma programs may also find it useful to conduct a multidisciplinary educational conference or "Grand Rounds" (weekly to monthly) to discuss interesting cases. Lower volume facilities may consider the same on a less frequent schedule. A portion of the PIPS program must be dedicated exclusively to the pediatric trauma population. The trauma center PIPS Committee must integrate the pre-hospital component, scene transports and inter-facilities transfers, into its review and analysis.

Credentialing

An important aspect of the PIPS plan is the establishment and routine verification of trauma care provider credentials. Provider credentialing occurs through established channels within the hospital's medical staff, nursing, and ancillary services, and mechanisms for describing their compliance are incorporated in the PIPS plan. Coordinating the documentation of physician and nurse credentialing between the trauma service and the medical and nursing staff offices is an important aspect of the trauma center designation process. The credentialing requirements for MSDH designated trauma facilities are outlined in the Mississippi Trauma Care System Regulations.

Volume Trending

The trauma patient population described above should be monitored to quantify the hospital's trauma service volume. This number will serve as a denominator and help the trauma program to measure resource and service utilization, morbidity and mortality rates, provider performance, and other relevant aspects of the service. This information can also be used to help target service needs, such as resources or staff, and establish thresholds for performance improvement. For instance, tracking the number of direct admissions from the emergency department to the operating room (OR) correlated with the time of day or day of week could help determine OR staffing needs. Likewise, tracking the incidence of complications correlated with specific population characteristics (i.e., DRG, ICD-9/10, or other classification systems) can establish the need to develop a practice guideline.

Process Measures

The use of process indicators to measure, evaluate, and improve system performance is an important component of the trauma PIPS plan. Process expectations can be developed from committee consensus, hospital policies, evidence-based practice guidelines, system protocols, or the state or regional trauma plan. There are a number of categories the trauma program may want to focus on initially, including compliance with established protocols, timeliness and availability of providers or services, availability of facilities (operating room, ICU beds, etc.), delays in assessment, diagnosis, or care, appropriateness of triage decisions and transport destinations, communication issues, completeness of documentation, etc. Each performance expectation must be clearly defined, measurable, and obtainable within reason.

Outcome Measures

There are a number of variables that have traditionally been used to measure the outcome of trauma care including morbidity, mortality, length of hospital and intensive care unit stay, resource utilization, cost, functional disability, and patient satisfaction. Complications and injury-related deaths need to be evaluated by the trauma peer review committee or trauma multidisciplinary committee, for opportunities for improvement, using a pre-defined, standardized methodology that includes categorizing findings. Complications should be determined using pre-established definitions such as those defined by the American College of Surgeons, Committee on Trauma (ACS-COT), and/or NTDB for data abstraction and reporting.

Mortality Review

All trauma mortalities should be reviewed by the trauma program as they relate to trauma care and trauma system issues. At many trauma centers, mortalities are also reviewed during formal trauma mortality and morbidity review comprised of a multidisciplinary surgical physician committee. A trauma center should define criteria for case selection for formal trauma mortality and morbidity review. Documentation of case review should be completed by the trauma medical director (TMD) and the trauma program manager (TPM). Corrective action plans should be developed and issues trended as appropriate. Mortality outcomes data should be aggregated, trended, and reported. The process for Mortality PI Review is defined within Appendix B.

Improvement Activities and Corrective Action

When a reoccurring problem, sentinel event, or inappropriate variation occurs, improvement initiatives or actions are developed and documented by the trauma program, trauma PIPS committee or peer review committee. The goal of the corrective action initiative is to reduce variation in care and improve outcome by eliminating the

identified problem. The action plan should include: who or what is going to change; who is assigned responsibility for problem resolution; what action will be taken and when it will occur; and who is responsible for follow-up and when it will occur. Examples of corrective strategies include the revision of guidelines, protocols, or policies, targeted education, provider counseling, change in provider privileges.

Documentation and Reporting

The trauma center PIPS program includes complete, accurate and confidential documentation of ongoing monitoring, corrective action, progress, and re-evaluation. It is important that trauma staff understand MS law governing PI and peer review and take appropriate measures to protect PIPS records and review proceedings from disclosure. A responsible PIPS program assures that information is handled in a strictly confidential manner. Minutes from the review committee need to be well documented. A tracking form or similar tool may be useful to track the problem through committee review, interdepartmental evaluation, action plan implementation, and loop closure.

Pre-hospital Review and Reporting

Whereas there is an active process for review within the pre-hospital agencies, there is also the critical element of the process in concert with the trauma center case reviews. A collaborative effort to incorporate this review is essential to the comprehensive analysis of volume, process, outcomes and mortality reviews.

DATA COLLECTION, INFORMATION SOURCE, and VALIDATION

Specific, uniform data that describes the injury incident, demographics, pre-hospital information, diagnosis, treatment, rehabilitation, outcomes, and cost of care should be collected by every hospital and reported to the MS Trauma Registry (MTR). It is imperative that data be collected and reported using standardized definitions as recognized by the MTR. Data definitions should be consistent with those of the National Trauma Data Bank (NTDB). Every effort should be made to report pre-hospital data to the MTR.

Performance improvement efforts must be continuously supported by reliable, valid, and objective trauma data. Many useful sources of information are available to measure and evaluate system-wide performance and outcomes at all levels of the care continuum. The following information sources should be considered for routine monitoring of the trauma system, including data trending, comparative analysis, and benchmarking performance:

- Mississippi Trauma Registry (MTR)

- Mississippi EMS Registry (MEMSIS)
- Mississippi Traumatic Brain Injury (TBI) Database
- National Trauma Data Bank (NTDB)
- Pre-hospital care records
- Public safety records (FARS); these records provide information often not included in the pre-hospital care record
- 9-1-1 dispatch records
- Emergency department records and hospital discharge summary
- Inter-hospital transfer records
- Autopsy findings
- Vital Records – Death certificate data
- Complaints from all sources
- Hospital performance improvement findings
- System plan, protocols, policies, and practice guidelines
- Other National PIPS initiatives
- Federal agency initiatives or announcements (CDC, HHS, HS, etc.)
- SMARTT

Current Scope of Indicators as well as standard metrics is included in *Performance Improvement Indicators* found under Appendix E.

SCOPE OF REVIEW AND KEY ACTIVITIES

PATIENT POPULATION

To ensure consistent PIPS monitoring and evaluation as well as data collection throughout the state, the Trauma Rules and Regulations will define standardized criteria for determining the trauma patient population. These criteria should be uniformly applied throughout the state for all levels of care to identify the population to be monitored and reviewed. The patient population is defined by the Trauma Registry Inclusion Criteria, Appendix A.

CONFIDENTIALITY

The MSDH is responsible for ensuring that state law adequately protects from discovery, including subpoena, all aspects of state and regional PIPS committee proceedings including meeting materials, oral and electronically transmitted communications, written records, notes, findings, and records created by the review committee in its course of investigation. This includes review of both individual and institutional care. In addition to statutory protection, the MSDH must ensure that appropriate measures and procedures are in place to meet the confidentiality requirements of the data and protect against threats, unauthorized uses or deliberate or

inadvertent disclosures. Hospitals, agencies, state and regional PIPS committees, and the MSDH may wish to consider the following measures to protect confidential patient and provider information:

- Use of a locked file for all relevant information.
- Requiring a signed statement or agreement by all participants to maintain confidentiality.
- Sanction for any breaches of confidentiality.
- Shredding of all copies of PIPS documentation.
- Employing security efforts at PIPS meetings such as numbering and collection of all meeting materials.
- Use of security procedures when mailing or transmitting PIPS documentation through a facsimile or modem
- Addressing all correspondence to an assigned person rather that an agency
- Clearly marking all letters “confidential” along with citations of statutes or regulations protection
- Removing all patient identifiers, dates, and locations of scenes from information, particularly when used for education
- Providing direct supervision, e.g., staff standby at the receiving facsimile when faxing PI documents such as case summaries between hospitals.
- Recopying all “blacked out” redacted materials so information cannot be read.

Proceedings of the PIPS Committees are protected by the following statutes:

- Miss. Ann. § 41-59-77. Trauma registry data confidential and not subject to discovery or introduction into evidence in civil actions.
  Data obtained under this chapter for use in the trauma registry is for the confidential use of the Mississippi State Department of Health and the persons, public entities or private entities that participate in the collection of the trauma registry data. Any data which identifies an individual or a family unit that is collected for use in the trauma registry shall be confidential and shall not be subject to discovery or introduction into evidence in any civil action.
- Miss. Ann. § 41-63-9. Discoverability and admissibility into evidence of proceedings and records of review committees.

  (1) Notwithstanding any conflicting statute, court rule or other law, in order to encourage medical and dental review activity, the proceedings and records of any medical or dental review committee shall be confidential and shall not be subject to discovery or introduction into evidence in any civil action arising out of the matters which are the subject of evaluation and review by such committee. No person who was in attendance at a meeting of such committee

shall be permitted or required to testify in any civil action regarding any evidence or other matters produced or presented during the proceedings of the committee or as to any findings, recommendations, evaluations, opinions or other actions of the committee or its members. However, information, documents or records otherwise discoverable or admissible from original sources are not to be construed as immune from discovery or use in any civil action merely because they were presented during the proceedings of such committee, nor should any person who testifies before such committee or who is a member of such committee be prevented from testifying as to other matters within his knowledge. Provided, however, a witness shall not be questioned concerning his participation on or testimony before such committee or opinions formed by him as a result of such committee hearings or proceedings.

(2) The provisions of subsection (1) of this section which limit the discovery of medical or dental review committee records and proceedings shall not apply in any legal action brought by a medical or dental review committee to restrict or revoke a physician's license to practice medicine or hospital staff privileges, or in any legal action brought by an aggrieved physician against any member of the committee or the legal entity which formed such committee for actions alleged to have been malicious.
(3) The provisions of this statute, including the confidentiality provided in this subsection, shall be deemed part of the substantive law of this state enacted for the expressed legislative purpose of promoting quality patient care through medical and dental peer review activities.

All members of the PIPS Committee, SMEs, invited guests, and any other persons present during a PIPS Committee or sub-committee meeting must have completed a Confidentiality Agreement and have it on file with the Bureau of Acute Care Systems - Trauma.

REFERENCES

1. American College of Surgeons Committee on Trauma. *Resources for Optimal Care of the Injured Patient*. Chicago, IL: American College of Surgeons; 2014.

2. Berg GM, Acuna D, Lee F, Clark D, Lippoldt D. Trauma performance improvement and patient safety committee: fostering an effective team. *J Trauma Nurs*. 2011; 18(4):213-220.

3. Hashmi ZG, Haider AH, Zafar SN, et al. Hospital-based trauma quality improvement initiatives: first step toward improving trauma outcomes in the developing world. *J Trauma Acute Care Surg*. 2013; 75(1):60-68.

4. Byrnes MC, Irwin E, Becker L, et al. A trauma outreach program provided by a level I trauma center is an effective way to initiate peer review at referring hospitals and foster process improvements. *J Trauma*. 2010; 68(4):778-782.

5. American College of Surgeons Trauma Registry Programs. *National Trauma Data Bank Report Data Dictionary*; 2015 Admissions.

6. American College of Surgeons, Committee on Trauma, 2014; Trauma Quality Improvement Program Presentation on TQIP.

7. American College of Surgeons Committee on Trauma. Trauma performance improvement: a reference manual. https://www.facs.org/quality-programs/trauma/publications. May 1, 2015

8. Chang A, Schyve P, Croteau R, et al. The JCAHO patient safety event taxonomy: a standardized terminology and classification schema for near misses and adverse events. International Journal for Quality in Health Care Advance Access, 2005; 17: 95-105.

APPENDIX A - Trauma Registry Inclusion Criteria

Trauma

ICD-10 Code:

- S00-S99 with 7th character modifiers of A, B, or C only
  - (Injuries to specific body parts-initial encounter)
- T07 (unspecified multiple injuries)
- T14 (injury of unspecified body region)
- T79.A1-T79A9 with 7th character modifier of A only
  - (traumatic compartment syndrome-initial encounter)

Burn Patients

ICD-10 Code:

- T20-T28 with 7th character modifier of A only
  - (Burns by specific body parts-initial encounter)
- T30-T32 (burn by TBSA percentages)

Including:

- Any inhalation injury
- 2nd or 3rd degree burns > 5% TBSA
- Any 2nd or 3rd degree burn of 1% or greater to:
  - Hands, Feet, Joints, Face, or Perineum

Plus any of the following:

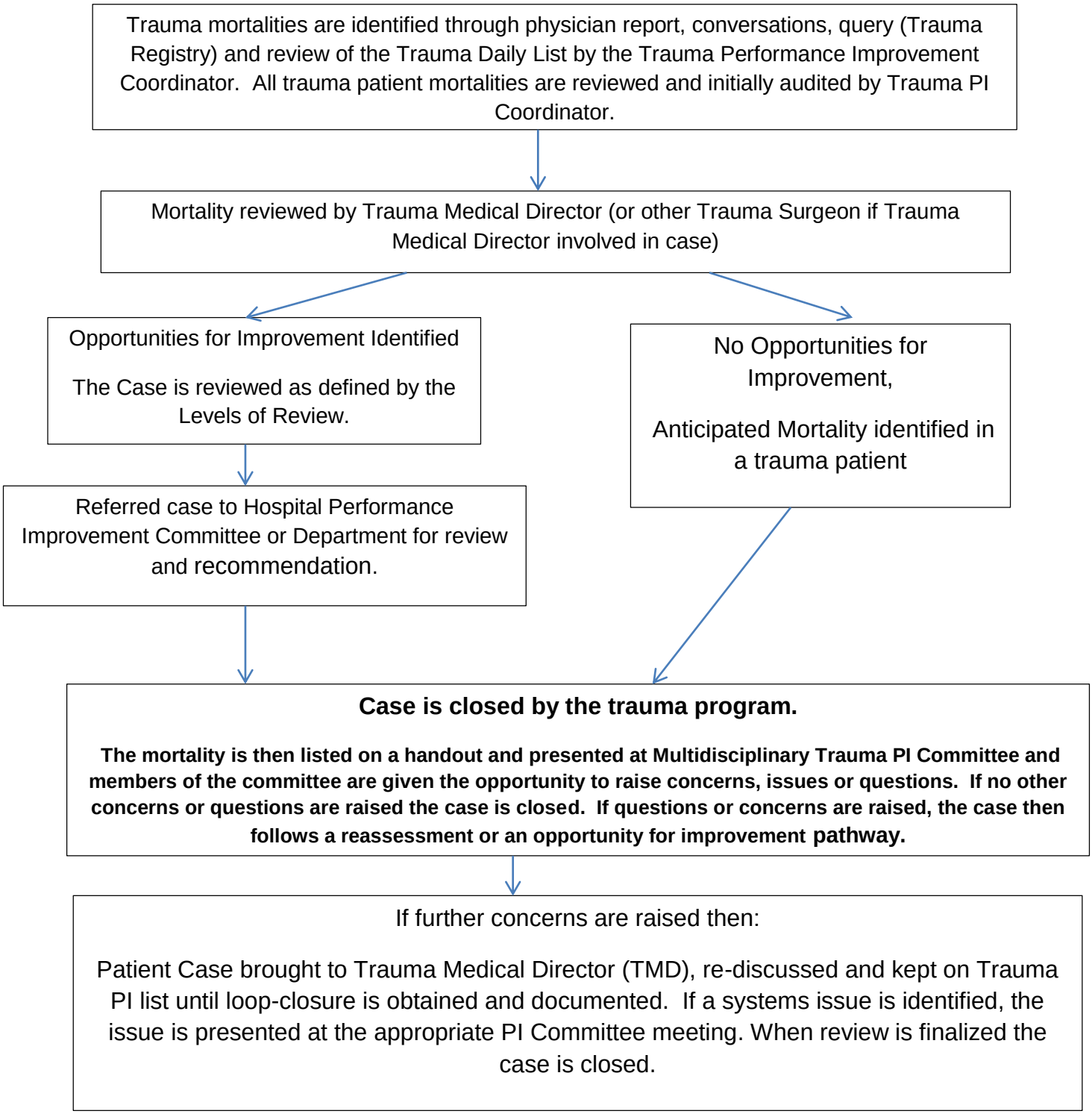
- Transferred between acute care facilities by EMS
  - Ground or Air
- Admission to the Hospital for any LOS
  - Excludes ED>OR>Home (from PACU)
- Died
- Triaged to a Trauma Hospital by EMS
- Trauma Team Activation
- Any Trauma Patient received via Air Ambulance

The following should be excluded:

- Late Effects (>/= 30 days PTA)
- Foreign Bodies
- Extremities and/or hip fractures from same height fall in patients over age of 70

Appendix B:

Mortality PI Review



Appendix C

Trauma Review Taxonomy

1. **Impact Issues**
    a. Category of Trauma
    b. Location
    c. Means of Transportation to Trauma Center

2. **Type Issues under Review**
    a. Communication (prior, during and after care)
    b. Patient Management (Issues with delegation, tracking or follow-up, referral or consultation, use of resources)
    c. Clinical Management (Pre-Hospital, Trauma Center, Post Trauma Emergent Care)

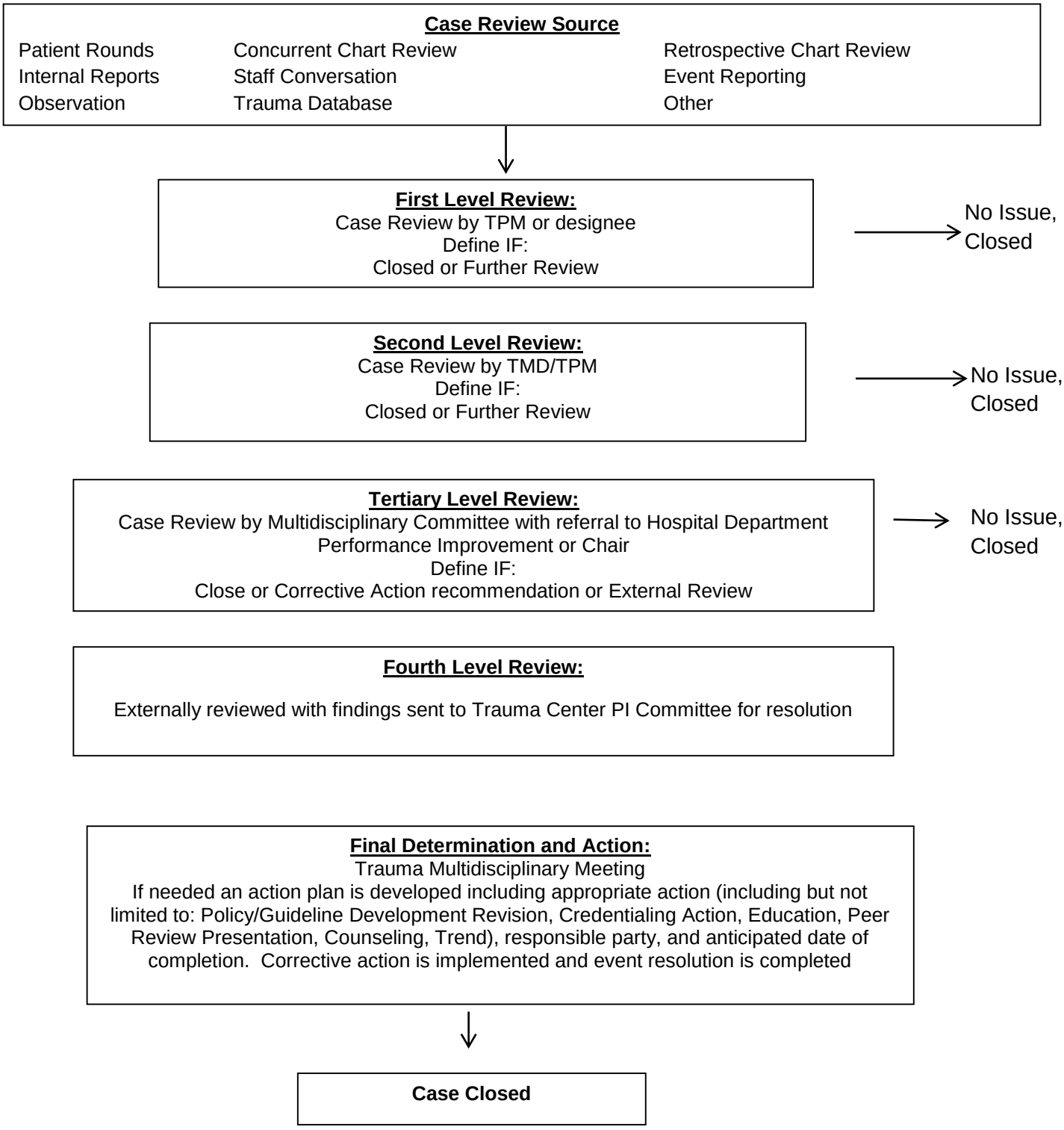
3. **Domain**
    a. Setting (Hospital or Non-Hospital)
    b. Period (Date and Time)
    c. Staff (Transport, Physicians, Nurses, Others)
    d. Patient (Demographics)
    e. Target (Diagnostic, Therapeutic, Rehabilitative, Other)

4. **Cause**
    a. Structure/Process (Organizational, Technical)
    b. Human (actual or near misses)
    c. Other (staffing, competency, transportation, trauma location circumstances)

5. **Prevention and Mitigation**
    a. Universal (Improve activities, Improve the effectiveness, reduce the risk of healthcare-acquired injury)
    b. Selective (issue specificity)
    c. Indicated (improved parameters of care, improved the delivery of care improved the safety, and improved the outcome)

Appendix D

Trauma Program Performance Improvement Review Process



Core Measure Indicator

PURPOSE

These indicators found here in are determined by the PI Committee to be of importance to the continued improvement of the Trauma System.

CONTENT and SCOPE OF INDICATORS

There are essential data points that are recommended for consideration in the selection of indicators and metrics. Based on the recommendation of the American College of Surgeons Trauma Quality Improvement Program (ACS TQIP®), the scope of these indicators are established through consistent definition and via standardized extraction methodologies. The scope of the indicators may be defined broadly below. The current Mississippi Trauma Registry follows these key principle indicators. The methodology of cross-linking data points may be essential to the performance improvement activities of each group involved in the trauma program.

REQUIRED TRAUMA CORE INDICATORS (TCI)

Essential to the PIPS process is monitoring and measurement of the outcomes of specific processes or procedures related to trauma care to improve efficiency, increase effectiveness, or reduce real or potential harm, as well as to improve future outcomes. Process and outcomes measures, referred to as audit filters or indicators require defined criteria and metrics. TCI are mandatory indicators within the Mississippi Trauma Care System.

Appendix E

Core Measure Indicator

Levels I-IV
• **TCI1 – Mortality Rates**
○ 1a - Population
○ 1b - ISS
• **TCI2 - Trauma Team Activation Summary**
○ 2a - Alpha
○ 2b - Bravo
○ 2c – ISS > 24 without Alpha TTA – missed activation/undertriage
○ 2d – ISS > 24 without Alpha TTA – TTA criteria not met
• **TCI3 –ED to Transfer-out LOS**
○ 3a – Alphas
○ 3b – Burns
○ 3c – Peds
○ 3d - All
○ 3e – Non-TTA
• **TCI4 - Trauma Diversion**
○ 4a – Total
○ 4b - Critical Care Bed Unavailability (may be n/a for Lev IV)
○ 4c – ED Capacity
○ 4d - Trauma Surgeon Unavailability (may be n/a for Lev IV)
○ 4e - OR Unavailability (may be n/a for Lev IV)
○ 4f - Other
Levels I-III
• **TCI5 –Surgeon Response**
○ 5a – Trauma Surgeon, Alpha
○ 5b – Trauma Surgeon, Bravo
○ 5c - Nonsurgical management penetrating torso
○ 5d – Orthopedic Surgeon, ED Response
○ 5e – Orthopedic Surgeon, Open tibial fx debridement
○ 5f – Neurosurgeon, ED Response (may be n/a for Lev III)
○ 5g – Neurosurgeon, EDH/SDH craniotomy > 4 hrs
• **TCI6 – Non-surgical Admissions**
○ 6a – Total
○ 6b – Trauma Surgeon Consultation
○ 6c – Other Surgical Service Consultation
○ 6d – No Surgical Service Consultation

TCI1 - Mortality Rates

All trauma-related mortalities must be systematically reviewed and those mortalities with opportunities for improvement identified for peer review.

A. TCI1a - Mortality rate by population subgroups

$$\% = \frac{\text{Mortality number in subgroup}}{\text{All patients}} \times 100$$

TCI1a - MORTALITY RATE BY POPULATION SUBGROUPS:	
Trauma - All	
Non-Adjusted	
DOA	
ED	
In-Hospital	
Pediatric	
DOA	
ED	
In-Hospital	
Older Adult	
DOA	
ED	
In-Hospital	

Criteria definitions:

- Pediatric – Age 15 years or less
- Older adult – Age 65 years or greater
- DOA - Pronounced dead on arrival with no additional resuscitation efforts initiated in the ED
- ED - Died in the ED despite resuscitation efforts
- In-Hospital – Died post ED, including the OR

B. TCI1b - Mortality rate (total) by ISS subgroups

$$\% = \frac{\text{Mortality number in ISS Range}}{\text{All patients}} \times 100$$

TCI1b - MORTALITY RATE BY ISS SUBGROUPS:				
ISS	**Number (#)**	**Admitted to Trauma Service #**	**Mortalities #**	**Mortality %**
1-9				
10-15				
16-24				
>24				
Total				

Criteria definitions:

- ISS – Injury Severity Score
- Admitted to Trauma Service – Admission post ED for any length of time
- Mortalities – Total

TCI2 – Trauma Team Activation (TTA) Summary

All TTAs must be categorized by the level of response and quantified by number and percentage.

$$\% = \frac{\text{Number in subgroup}}{\text{All patients}} \times 100$$

TCI2 - TTA SUMMARY		
TTA Level	**TTA #**	**% of Total Registry Patients**
2a - Alpha		
2b - Bravo		
ISS > 24 without alpha TTA:	**#**	**%**
2c – Missed activation/undertriage		
2d – TTA criteria not met		

TCI3 – ED to ED Discharge

All trauma patients who are transferred during the acute phase of care to another trauma center, acute care hospital, or specialty hospital or when specialty personnel are unavailable must be subjected to individual case review to determine the rationale for transfer, appropriateness of care, and opportunities for improvement.

TCI3-A ED Arrival TO ED Discharge LOS	
Subgroup	**Average Minutes**
3a - Alpha	
3b – Burn	
3c – Peds	
3d – All Patients	
3e – Non TTA	

TCI3A: ED Discharge – ED Arrival = ED Discharge *(Provider Disposition)* time in minutes

TCI3- B ED Arrival TO ED Departure LOS	
Subgroup	**Average Minutes**
3a - Alpha	
3b – Burn	
3c – Peds	

3d – All Patients	
3e – Non TTA	

TCI3- B: ED Departure – ED Arrival = ED Departure *(time patient leaves the emergency department)* time in minutes

Criteria definitions:

- Alpha – Alpha TTA
- Burn – Injury type = burn
- Peds – Age 15 years or less
- All Patients – Total number
- Non TTA – Not alpha or bravo TTA

TCI4 – Trauma Diversion

Trauma center diversion hours must be routinely monitored, documented, and reported, including the reason for initiating the diversion

$$\% = \frac{\text{Number of diversion hours}}{\text{8,670 hours in a year}} \times 100$$

TCI4 – TRAUMA DIVERSION	
Subgroup	**Hours : Minutes**
4a - Total	
4b – Critical Care Bed Unavailability	
4c – ED Capacity	
4d – OR Unavailability	
4e – Trauma Surgeon Unavailability	
4f - Other	

TCI5 - Surgeon Response

Surgeon on-call response must be continuously monitored and variances documented and reviewed for reason for delay, opportunities for improvement, and corrective actions.

$$\text{Fallout Rate \%} = \frac{\text{Number in subgroup not meeting defined response time}}{\text{All patients in subgroup}} \times 100$$

TCI5 – SURGEON RESPONSE			
Surgeon	**On-Call Response** (average minutes)	**Fallout Rate** (percent not meeting response time)	**Goal**
Trauma Surgery			
5a - Alpha			Fallout rate

			20% or <
5b - Bravo			Fallout rate 20% or <
5c – Nonsurgical management of penetrating torso injury subsequently requiring operative intervention			
Orthopedic Surgery			
5d– ED Response			Fallout rate 20% or <
5e – Open tibial fx debridement			
Neurosurgery			
5f – ED Response			Fallout rate 20% or <
5g– EDH/SDH craniotomy > 4 hrs			

Criteria definitions:

- Open tibial fx debridement excluding low velocity GSW
- EDH/SDH craniotomy greater than 4 hours post EDA and excluding those for ICP monitor placement

TCI6 - Non-surgical Admissions

Trauma centers admitting trauma patients to nonsurgical services must assess criteria related to these admissions with review to determine the rationale for admission to a nonsurgical service, adverse outcomes, and opportunities for improvement.

$$\% = \frac{\text{Number in subgroup}}{\text{Total admissions}} \times 100$$

TCI6 = NONSURGICAL ADMISSIONS	
6a – Total %	
6b – %, Trauma surgeon consultation	
6c – %, Other surgical service consultation	
6d - %, No surgical service consultation	

PROCEDURE

Recommendations for the addition of new indicators, or the modification/deletion of existing indicators, may be made through the component Sub-committees (System, Region, Hospital, Pre-hospital) at any time throughout the calendar year. During the year, the Department will consolidate all of the proposed changes and will transmit them to the Committee members for review. After a review and consultation period, the Committee will approve any changes, and will determine which indicators will be monitored for the next cycle. The Regions will insure that hospitals and pre-hospital providers receive the updated information.

Appendix F:

MISSISSIPPI TRAUMA REGISTRY DATA INTEGRITY/VALIDATION GUIDELINES

PURPOSE

The purpose of this guideline is to provide methods\plans for obtaining consistent data integrity and validation for the Mississippi State Trauma Registry to assure reliable and accurate data as well as ensuring that each hospital has the best data to drive their individual trauma program.

GUIDELINE FORMAT

This guideline is divided into three phases: Hospital, Hospital to State and State. It will also include the software capabilities and the human element.

HOSPITAL

Trauma centers must have a written plan for ensuring that the data entered into the trauma registry is accurate. The plan must reflect compliance with data point definitions (data dictionary).

The written plan must address the following:

- Performed quarterly, at a minimum
- Re-abstraction of 10% of admitted patient records
- Minimum of 5 data fields evaluated for consistency
- Process whereby original person cannot re-abstract the determined data elements from the medical record for data validation purposes
- Reporting structure
- Threshold (minimum 80%)
- Corrective Action Plan with Event Resolution

Evidence of compliance will be required at the time of trauma center inspection for Level 1-3. Level 4 trauma centers will submit evidence with their application for designation.

HOSPITAL TO STATE

On or before the sixth day of every month, the hospital will transfer all Registry data to the State from the preceding 2nd month. This transfer will contain all data from two months before, i.e. August 6 data will be from the month of June. This is necessary to have as many charts completed as possible. All data in the Registry will be transmitted to include even data that was put in on the day of transfer. Records with any changes that were made to data previously submitted, regardless of the date of the first entry, will be sent with the current transfer.

The transfer will be accomplished utilizing the State website to ensure that the data is kept confidential. In addition, data is contained in an encrypted file that can only be used within the trauma application.

It is the Registrar's responsibility to ensure that the state receives the data as outlined.

REGIONS

Trauma Regions must have a written plan for validating trauma registry data submitted by region trauma centers. The plan must reflect compliance with data point definitions.

The written plan must address the following:

- Performed quarterly, at a minimum
- Minimum of 5 data fields evaluated for consistency
- Reporting structure
- Threshold
- Corrective Action Plan with Event Resolution

Evidence of compliance will be required at the time of trauma region audits.

STATE

The below procedures\reports are performed by the State as indicated

Data Procurement

- Approximately 1 week prior to the data submission due-date, a reminder is sent to our users and regional administrators that data is due on the 6th of the upcoming month.

- On the 7th of the upcoming month, a Data Submissions Summary Yes/No report is generated. If data has not been received for a facility, that facility's name is highlighted on the Notification of Delinquency (NOD) report. Those applicable facilities are then contacted to verify if they do or do not have data for the month in question, notating the outcome on the NOD report. User is assisted as needed to ensure data is transferred. If transfer protocols prevent transfer, the user may email the encrypted file to the State and our staff will transfer the file for the user.

Submission Record Manager

Twice per month, review system Submission Record Manager.

- If any files have status -1, reset to 0, save and poll application.
- Status 2 is displayed when file is successfully imported.

Reports - Monthly On The 15th

- Data Submission Summary Count Report
  - Send to hospitals to verify counts. If discrepancies found, State and Hospital generate Patient Listing Reports and compare output. Hospitals will modify any records not on Central Registry list and submit those records to the State.
- Quality Assurance Reports
  - Send to hospitals to verify if data is correct. Hospitals review reports and submit the monthly QA response form. If data is not correct, hospitals modify applicable records and resubmit to the State.
- Missing Values Report

  Queries are run on data in the following fields to detect missing or invalid values:
  - Discharge Status
  - Time in Emergency Department (ED LOS)
  - Race
  - Injury Type
  - Trauma Injury Severity Score (TRISS) Non Burn
  - Age
  - Mechanism of Injury
  - Glasgow Coma Score
  - Blood Pressure
  - Gender
  - Hospital Days
  - Injury Severity Score
  - Injury County
  - Arrival Mode
- Questionable Values Report

  Queries are run on data in the following fields to detect questionable values:
- Injury Severity Score (ISS) = 75
  - EDLOS > 90 min.
  - EDLOS > 90 min. for Transfer Patients - All Hospitals
  - EDLOS > 90 min. for Transfer Patients - Level IV Hospitals
  - EDLOS > 360 min.

- Inclusion Criteria Reports – See Appendix A

AUDITS/ASSESSMENTS

The State will implement a program where an initial assessment of all hospitals registry data will be reviewed by a coding expert to determine if the Registrar is inputting the best data. There will be certain data points reviewed that are identified by the State that have the highest index of error. The diagnosis codes (use of Tricode) will always be included as one of the variables for review. If during this review there is a noted trend

with Tricode and the inaccuracies of coding, DICorp will be contacted to correct noted problems.

After the initial assessment the State will review the need for additional reviews as dictated by data integrity. The time period for additional reviews will be based on the needs identified.

After each assessment, education will be done for each provider and all educational material such as the data dictionary, etc. will be updated.