Hawaii Comprehensive Statewide Trauma System Plan

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Hawaii Department of Health
Emergency Medical Services and Injury Prevention Branch

Developed by the:
Emergency Medical Services and Injury Prevention System Branch
Trauma Section

with guidance from
Hawaii Trauma Advisory Council

Hawaii State Department of Health

Libby Char MD, FACEP

DIRECTOR OF HEALTH

1250 Punchbowl Street
Honolulu, HI 96813

Emergency Medical Services Injury Prevention System Branch

3675 Kilauea Avenue, Trotter Building
Honolulu, HI 96816
(808) 733-8330
Fax: (808) 733-9216

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Introduction

Injury is a major public health problem in Hawaii. It is the leading cause of death and disability between ages one and 44, and the fourth leading cause of death overall among state residents. Since 2016, injury related deaths per 100,000 population have increased in the state from 49.3 to 52.8 according to the United Health Foundation. Injury is a *disease* that can be prevented or managed in such a way that reduces severity and ultimately improves outcome. Successful management of traumatic injury requires the collective development of a comprehensive statewide trauma system built on the foundations of patient safety, performance improvement, community education, patient outcomes, research opportunities, and compliance with national bench mark standards.

In its 2003 document, *Trauma System Agenda for the Future,* the National Highway Traffic Safety Administration (NHTSA) defines a trauma system as "an organized, coordinated effort in a defined geographic area that delivers the full range of care to all injured patients and is integrated into the local public health system. The true value of a trauma system is derived from the seamless transition between each phase of care, integrating existing resources to achieve improved patient outcomes. Success of the trauma system is largely determined by the degree to which it is supported by public policy."

The purpose of this document is to provide a description of the activities that have been historically undertaken to develop a trauma system for Hawaii and to introduce proposed activities for the statewide trauma system. It should serve trauma stakeholders to educate new partners regarding the history and scope of the comprehensive trauma system that is envisioned for Hawaii. A thorough assessment using national benchmarks, selection of strategic and measurable objectives and evaluation process will be completed every three years by the Department of Health (DOH) with the participation of the Hawaii Trauma Advisory Council (HTAC). The Hawaii State Trauma System Plan will provide a measuring stick for assessment of progress, making it a dynamic rather than static document and process.

Historical Background for National and State Trauma Development

National

During the late 1950s, areas of excellence in trauma care were being developed utilizing lessons learned from military experience, aeromedical evacuation and the concept of the "Golden Hour". Fledgling trauma centers included the R. Adams Cowley Shock Trauma Center in Baltimore, and Cook County Medical Center in Chicago. In 1966, the National Academy of Sciences published a white paper entitled *Accidental Death and Disability: The Neglected Disease of Modern Society.* The reforms inaugurated by this paper led to the establishment of the first emergency medical services systems and the recognition of injury as a public health concern.

In 1976, a tragic crash of a small plane carrying an orthopedic surgeon and his family into the cornfields of Nebraska led to recognition that many hospitals and providers were unprepared to manage seriously injured patients. Two years later, the first Advanced Trauma Life Support (ATLS) course was presented by the American College of Surgeons. *Hospital Resources for Optimal Care of the Injured Patient* was first published in 1979 by the American College of Surgeons. The American College of Surgeons has been verifying hospitals' compliance with the criteria in the resource document since 1987. The most recent version of *Resources for Optimal Care of the Injured Patient* published by American College of Surgeons Committee on Trauma serves as a guide for hospitals seeking trauma center designation.

In 1992, under the auspices of the Health Resources and Services Administration (HRSA), the Model Trauma Care Systems Plan was developed for the United States. Initially, the focus was on developing Level I and Level II trauma centers and pre-hospital protocols that bypassed other acute care facilities to bring injured patients to the trauma centers. Although death and disability were significantly decreased through this approach, by the mid-1990s, it became evident that the burden of injury in suburban and rural areas was not being adequately addressed. To better serve the entire population of a state or region, *inclusive* trauma systems were developed. Level III and IV centers emerged and the concept of "an acute care hospital within a trauma system" encouraged all health care facilities to participate to the extent of their resources in the care of injured patients.

Hawaii

For over 25 years, development of a statewide trauma plan has been discussed by the Department of Health (DOH) and healthcare providers, both institutions and individuals. In 1992, as part of the HRSA Trauma/EMS program, initiatives were begun to develop a state trauma plan and collect statewide trauma-related data. The plan developed at that time was limited to guidelines for pre-hospital trauma triage and transport. Hawaii's challenges related to the nature of an island state were addressed in an aero-medical strategic plan published in 1999. A Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis which identified essential elements for a statewide trauma system was completed in 2003. Lack of funding and personnel made it difficult to sustain development work.

In 2005, the Healthcare Association of Hawaii and the Department of Health worked collaboratively to facilitate a visit from the American College of Surgeons Trauma System Consultation Program to review the status of the Hawaii Trauma System. The key recommendations from that survey were included in a report to the State Legislature in 2006. After reviewing the findings, the twenty-third legislature, through Senate Concurrent Resolution No.70, requested that the Director of Health develop a trauma system plan for Hawaii.

The American College of Surgeons Trauma Systems Committee visited the state January 2017 to review the state trauma system with a final report received in April 2017. The Trauma System Consultation Report Priority Recommendations are summarized in Appendix E.

Enabling Legislation

With the support of hospitals, physicians, key legislators and other stakeholders, the Trauma System Special Fund was created by **Act 305 of the 2006 Legislature**. The Act provided for the establishment of a special fund to support the continuing development and operation of a comprehensive state trauma system to provide access to trauma centers for injured patients across the state. The fund is to be administered and expended by the Department of Health.

By **Act 102 of the 2007 Legislature**, a portion of the moneys from the cigarette tax is deposited in the trauma system special fund. In 2008, Act 231 was passed, levying a trauma system surcharge in addition to civil penalties for a number of offenses including failure to properly use a child passenger restraint system, inattention to driving, traffic accidents involving death or bodily injury, vehicle and property damage, failure to render aid, racing, speeding under special circumstances, excessive speeding, and operating a vehicle under the influence of an intoxicant.

Hawaii Revised Statutes, Chapter 321, Part XVIII

321H Neurotrauma
321-22.5 Trauma system special fund
321-221-236: State Comprehensive Emergency Medical Services System

Statewide Structure of the Trauma System

Hawaii Department of Health, Emergency Medical Services and Injury Prevention System Branch

The State Department of Health (DOH) is the legally responsible entity and is the lead agency for the State Trauma System and statewide trauma development. The Emergency Medical Services-Injury Prevention Systems Branch (EMSIPSB) Trauma Program is the program within the DOH responsible for the administrative functions of planning, developing, maintaining, and evaluating the system. The State Trauma Program Coordinator manages the day to day operations of the trauma system including designation consultation, trauma registry management, and performance improvement activities. Input from stakeholders at multiple levels is essential to the success of development and maintenance of the State Trauma System.

Hawaii Trauma Advisory Council

The Hawaii Trauma Advisory Council (HTAC) has been formed as a broadly representative advisory body of trauma stakeholders. The purpose of the HTAC is to advise the DOH on matters related to the development, implementation, evaluation and improvement of trauma services statewide. Membership of the HTAC includes representatives of each of the trauma centers, hospitals providing specialty services such as pediatric critical care, burn care and rehabilitation, injury prevention specialists, EMS, aeromedical agencies, tourism experts, and professional organizations such as the American College of Surgeons, American College of Emergency Physicians, Emergency Nurses' Association, and Hawaii Tourism Authority. As the council begins addressing system issues, additional members or ad hoc attendees may include the medical examiner's office, legislators, insurance payers and interested community members. Representatives of the RTACs shall report activities and findings to the HTAC. The HTAC Charter is found in **Appendix D**.

Regional Trauma Advisory Councils

Oʻahu

An Oʻahu Regional Trauma Advisory Councils (ORTAC) will be formed to address specific local issues which may include regional EMS triage and transport guidelines and patient transfer protocols. Council members should include acute care facilities, both trauma designated and non-designated, pre-hospital and interfacility transfer agencies, public safety providers, injury prevention personnel, and consumers. The highest-level trauma center will serve as lead trauma center. Requirements for the lead hospital include regional outreach, education, prevention and quality review. RTAC meetings should be at held at least quarterly. Regional goals and objectives should be developed. Activities should be reported to the Hawaii Trauma Advisory Council. Additional funding has been provided for hospitals agreeing to the lead role.

Kauaʻi, Maui, Big Island

Trauma Centers in Kauaʻi, Maui, and Hawaiʻi counties will collaborate with local non-designated hospitals, pre-hospital and transfer agencies, public safety providers, injury prevention personnel and consumers with RTAC meetings to be called on an ad hoc basis.

In addition to addressing county-specific concerns, each trauma center may participate in a community based, interdisciplinary effort focused on injury prevention for at least one of the top two mechanisms of injury identified by the trauma registry data. Activities should be reported to the Hawaiʻi Trauma Advisory Council.

Sub-Councils

This section describes the introduction, authority, purpose, structure/compensation, and procedures of permanent sub-councils. Sub-Councils include:

Disaster, Finance, Pediatric, Performance Improvement, Research, and Trauma System Plan

Pediatric Sub-Council

Introduction:

Recognizing that pediatric trauma care requires the involvement and expertise of pediatric specialists, Hawai‘i Trauma Advisory Council (HTAC) has formed a Pediatric Sub-Council to assist with the oversight of pediatric trauma care in the State of Hawai‘i.

Authority:

Hawai‘i Trauma Advisory Council Pediatric Sub-Council is under the direction of the Hawai‘i Trauma Advisory Council which advises to the Emergency Medical Services (EMS) and Injury Prevention System Branch Hawai‘i State Department of Health.

Purpose:

The purpose of the HTAC Pediatric Sub-Council is to provide oversight of pediatric trauma care in the State of Hawai‘i. This may include, but is not limited to:

Providing pediatric specific educational opportunities to hospitals participating in the Hawai‘i State Trauma system.

Developing evidence-based guidelines and protocols to assist with the management of pediatric trauma patients.

Structure and Composition:

The HTAC Pediatric Sub-Council will consist of:

Kapi‘olani Medical Center for Women and Children
Queens Medical Center
State of Hawai‘i Department of Health
HTAC members with a special expertise or interest in pediatric trauma care.

A chairperson and secretary will be selected by the Pediatric Sub-Council membership.

Procedures:

HTAC Pediatric Sub-Council will convene quarterly. The secretary will distribute a meeting agenda and previous meeting minutes for review to the membership 1 week prior to each meeting.

Any guidelines or protocols developed by the Pediatric Sub-Council will undergo annual review and revision.

Disaster Sub-Council

Introduction:

The intended purpose of the Disaster Sub-Council is to support, not replace, existing committees or coalitions. Hawai‘i Health care Emergency Management Coalition (HHEMC) remains the primary resource in the State's Disaster Planning Program. The Disaster Sub-Council recognizes the authority and jurisdiction of HHEMC.
Recognizing that disaster preparation requires the involvement and expertise of multiple agencies, especially given the unique geographic challenges the State of Hawaii presents, the Hawai‘i Trauma Advisory Council (HTAC) has formed a Disaster Sub-Council to assist with integration of the trauma system into the emergency management program at the State level.

Authority:

HTAC Disaster Sub-Council is under the direction HTAC which advises the Emergency Medical Services (EMS) and Injury Prevention System Branch Hawai‘i State Department of Health.

Purpose:

This sub-council provides guidance on the topic of disaster. The sub-council includes experts with knowledge of specialized resources that exist within and external to the State that could be engaged in a disaster.
The goal is to ensure the highest standard of care possible for the greatest number of patients during a disaster event, with the following objectives:

- Recognize roles, responsibilities and organizational structure
    - Identification of Trauma centers (varying levels) in State Disaster plan
- Supply support to HHEMC by solidifying operational plans, including triage, treatment and transfer flow along the continuum of care from EMS to hospital
- Assist State and County organizations/health care entities with
    - Event response planning
    - Determine location of plans
    - Communication list and tree
- Develop an assessment of the Trauma System's ability to expand its capacity to respond to mass casualty incidents (MCI) using an all-hazards approach to conduct a gap analysis based on the assessment for trauma emergency

preparedness.

- Develop an organizational chart identifying relationships among the key emergency management agencies (Trauma System, EMS, Public Health, State and federal emergency management).
- Provide a specific mechanism for the State and regional trauma advisory councils to provide input to local and regional disaster planning.
- Provide a specific mechanism for dissemination of after-action reviews (AAR) of MCI/ MCE activities to all Trauma System stakeholders.
- Encourage DoD and Trauma System co-operation in MCI/MCE situations.
- Provide advice on contingency plans for Trauma System function with potential loss of Queen's Hospital or Kapi'olani, as may occur with natural or manmade disaster

Structure and Composition:

There is no legal obligation to participate. However, participation by hospitals, healthcare systems and their partners are encouraged to ensure the best possible patient outcomes for all those treated in the jurisdiction.

The HTAC Disaster Sub-Council will consist of:

- State of Hawai'i Department of Health – representative
- HTAC members with a special expertise or interest in Disaster Preparedness
- A chairperson and secretary selected by the Disaster Sub-Council membership.
- Primary EMS of all counties
- Voting member of EMSAC
- HHEMC Member representation
- Subject experts for each county

Procedures:

Disaster event related opportunities for improvement identified by this sub-council may be forwarded to the Process Improvement Sub-council as set forth by their process. HTAC Disaster Sub-Council will convene quarterly. The secretary will distribute a meeting agenda and previous meeting minutes for review to the membership 1 week prior to each meeting.

Any guidelines or protocols developed by the Disaster Sub-Council will undergo annual review and revision.

Prehospital care

Hawaii has a mature, statutorily enabled Emergency Medical Services (EMS) system. The DOH is responsible for ensuring the quality of services provided by the pre-hospital agencies. The state inspects vehicles and licenses personnel, provides for communication/radios, develops and implements patient care guidelines. Medical oversight for the EMS system occurs at several levels: the State EMS Medical Director, District (county) EMS Medical Directors, and agency EMS Medical Directors. Transporting agency personnel have on-line medical oversight via radio and/or telephone to emergency physicians in base hospitals.

911 emergency ambulance providers are contracted by the DOH and billing for services is done by the State EMS office. Current contractors are City and County of Honolulu Emergency Medical Services for Oahu, Hawaii County Fire Department for the Island of Hawaii, and American Medical Response for Maui and Kauai Counties.

The Hawaii EMS statute provides for the establishment of the EMS Advisory Committee (EMSAC) with representation from consumers and EMS system participants. The committee meets on a quarterly basis and serves in an advisory capacity to the Department on all matters relating to the state system.

Trauma Triage and Transport

The State EMS trauma triage and transportation guidelines are designed to assist EMS providers and Base Hospital Physicians in identifying severely injured patients who will most benefit from the state trauma system.

"30 Minute Rule"

The primary goal of the EMS trauma triage and transportation guideline is to assure that severely injured patients are rapidly transported to the facility with the highest trauma center designation level, ideally within 30 minutes of the injury. This may lead to occasions when a trauma patient is transported to the highest level designated trauma facility, bypassing a closer, lower designated or undesignated facility. The intent of bypass is to eliminate delays in providing definitive care.

Occasionally, particularly on the Neighbor Islands, the only facility within 30 minutes may not be a trauma center. In that case, every effort must be made to initiate transfer to a higher designated facility as soon as possible.

Exceptions to the "30 Minute Rule"

A cardiac arrest or a compromised airway in the pre-hospital setting are exceptions to the 30 minute rule. Patients with a compromised airway or those in cardiac arrest should be transported immediately to the nearest facility with personnel and resources to secure an airway, whether the facility is designated or not.

The state trauma system recognizes that professional judgment by EMS providers and on-line medical control is needed. When guidelines are not followed, the agency EMS medical directors must review the case with EMS providers and managers for appropriateness and for potential educational follow-up. All EMS Medical Directors have the opportunity serve on the HTAC.

Indicators of Serious Injury and Transport Guidelines

Appendix A is a decision algorithm to assist EMS providers in determining which patients meet the criteria for trauma triage and transport. **See Appendix A (updated to reflect Tripler as ACS Level II for injured DoD personnel identified in the field).**

Acute Care Facilities

Research indicates that the risk of death is significantly lower when care of the injured patient is provided in a trauma center compared to a non-trauma center. The trauma system seeks to have trauma center care available to all persons in Hawaii within 30 minutes or less of their injury. As a small, low trauma volume state with a population distributed across multiple islands, this can best be accomplished in the following way:

1) Develop and support robust, centrally located Level I or Level II trauma centers. The Queen's Medical Center currently fills the Level I role along with Tripler Army Medical Center as a Level II trauma center for DoD personnel.

2) Support existing and develop additional Level III trauma centers throughout the state to provide rapid assessment, evaluation and treatment of injured patients utilizing available resources, with a plan for rapid transfer to a higher level of care when necessary. Existing Level III centers include: Hilo Medical Center, North Hawaii Community Hospital, and Kona Community Hospital in Hawaii County; Maui Memorial Medical Center in Maui County; Kapiolani Medical Center for Women and Children and Pali Momi Medical Center on Oahu; and Wilcox Memorial Hospital in Kauai. These hospitals have all completed Trauma Level III verification and designation by the State of Hawaii. Castle Medical Center is scheduled for Level III verification within the next 3 years.

3) Continue development of a Pediatric Trauma Center. The ACS recognizes only Level I and II pediatric trauma centers. Due to limited pediatric subspecialist resources in Hawaii, DOH EMSIPSB recognizes a Pediatric Level III Trauma Center with Kapiolani Medical Center for Women and Children. Kapiolani Medical Center for Women and Children has completed Pediatric Level III trauma center verification and obtained pediatric designation by meeting the Hawaii Trauma Center Standards for Pediatric Trauma Centers and will be encouraged to work towards becoming an ACS verified Level II Pediatric trauma center. In addition, Tripler Army Medical Center is considering Pediatric ACS Level II at the next verification visit in 2022.

Designation of Hawaii Hospitals as Trauma Centers

All hospitals are encouraged to participate in the statewide trauma system to the extent that their resources allow. The system's goal is to match the resources of the hospitals with the needs of the injured patient as efficiently as possible with the additional goal of having seriously injured patients able to access a trauma center within 30 minutes of injury.

An organized approach to trauma care should include the commitment of a hospital's administration and medical staff to trauma care, a team approach to trauma patient assessment, data collection and contribution to a trauma registry, and performance improvement activities such as trauma multi-disciplinary hospital review and medical peer review.

In order to be designated as a trauma center, hospitals must meet minimum criteria developed by the State, based on the recommendations of the American College of Surgeons Committee on Trauma and be supported to move forward with becoming a trauma center by the DOH EMSIPSB and HTAC. These hospitals must be contracted with the State of Hawaii DOH EMS IPSB and part of the trauma system plan. The HTAC committee as well as DOH EMSIPSB worked with the ACS Trauma System Consultation Site Visit plan for the State as well as reviewing creating a tool to assist in determining the number, level, and location of trauma centers which is critical element of trauma system function and disaster response. The importance of controlling the allocation of trauma centers, as well as the need for a process to designate trauma centers based upon regional population need, has been recognized as an essential component of trauma system design and focus of HTAC and DOH EMS IPSB. Trauma center designation should be guided by the regional trauma plan based upon the needs of the population being served, rather than the needs of individual health care organizations or hospital groups. It is the professional obligation of the surgeons, physicians, nurses, EMS providers and public health professionals to work together to ensure that the patients' needs come first. Trauma system needs should be assessed using measures of trauma system access, quality of patient care, population mortality rates, and trauma system efficiency. Measures to be considered include:

- Number of Level I, Level II, and Level III centers per 1,000,000 population
    - Oahu
        - Level I: Queens Medical Center
        - Level II: Tripler Army Medical Center
        - Level III: Pali Momi; Kapiolani Women and Children's; Castle
    - Kauai – Level III: Wilcox
    - Maui – Level III: Maui Memorial
    - Big Island
        - Level III: North Hawaii, Hilo, and Kona
- Trauma System Performance Measures to be reviewed quarterly at HTAC
    - Percentage of population within 30 minutes of a Level I/Level II center

and gap analysis
- EMS transport times
- Percentage of severely injured patients seen at a trauma center or per county
- Trauma-related mortality
- Frequency, nature, and timeliness of inter-hospital transfers per region
- Percentage of time trauma hospitals are on diversion status
- Injury prevention and patient safety measures
- Disaster planning

Allocation of trauma centers should be reassessed on a regular scheduled based on an updated assessment of trauma system needs through HTAC.

The DOH plans to recognize three levels of designation, I, II and III; with I and II being the highest level of Trauma Care. See definitions in Appendix C for more information regarding designation levels. The DOH may also recognize facilities that provide specialized services to injured patients as Trauma Specialty Facilities. Examples are facilities that provide burn care but do not meet all trauma center criteria.

Hawaii Trauma Center Standards

The verification criteria for Levels I, II and III trauma centers in Hawaii are aligned the American College of Surgeons Committee on Trauma national standards. Currently, two methods of verification are accepted for Level III trauma centers. By 2022, DOH would like to establish a single method for verification using the American College of Surgeons Committee on Trauma Verification, Review, and Consultation Program for all trauma centers.

Process for State Designation

Hawaii Level I and Level II Trauma Centers

Hospitals seeking to become or continue as Hawaii Level I or II Trauma centers will successfully complete the American College of Surgeons (ACS) verification survey. The DOH will be named as the designating body in the ACS application and state trauma program staff will participate in the survey as observers.

Upon successful completion of the survey, the hospital/verification agency will submit verification documentation ensuring that the ACS Trauma Standards are met, to the State Trauma Program Coordinator who will confer with the State Trauma Medical Director role to review to ensure that both ACS Trauma Standards and the Hawaii Trauma Center Standards for Level I and II are met will then make recommendations to the Director of the DOH. The Director will then grant the appropriate trauma center designation based on recommendations from the verification visit final report and

recommendation from State Trauma Program Coordinator and the State Trauma Medical Director.

Hawaii Level III Trauma Centers

Two options exist for hospitals seeking to become or continue as Hawaii Level III Trauma Centers.

Option A: Hospitals may choose to have a verification survey by the ACS and follow the same verification pathway as Level I and II centers.

Option B: Hospitals may choose to have a verification survey developed by the State Trauma System.

The process is as follows:

- Complete and submit a self-reported survey to the State Trauma Office. The application will be reviewed for completeness and clarity.
- The DOH will arrange for a verification survey conducted by a state verification review team including Trauma Care Association of America (TCAA) review team consisting of physician and nurse reviewers. State of Hawaii Trauma Program Coordinator will also be present for all verification surveys.

Upon successful completion of the survey and assurance that the Hawaii Trauma Center Standards are determined to be met, the hospital/verification agency will submit verification documentation to the State Trauma Program Coordinator who will confer with the State Trauma Medical Director role to make recommendations to the Director of the DOH. The Director will then grant the appropriate trauma center designation based on recommendations from the verification visit final report and recommendation from State Trauma Program Coordinator and the State Trauma Medical Director.

Provisional Status

Trauma Centers not meeting all verification criteria may be granted a one year 'provisional' status upon recommendation of the survey team and approval of the DOH. Hospitals not meeting the verification criteria after one year provisional status will no longer be designated and must re-apply for verification and be re-surveyed.

Due to the rural nature of much of the state, hospitals unsuccessful in completing the designation process or declining to participate will continue to receive trauma patients when there are no other options. These hospitals, however, **will not be eligible to receive Trauma Care Special Funds.**

Re-verification/Designation

The application and designation process for re-verification will be the same as the initial application process.

Changes in trauma center status including resource availability, personnel changes, organizational name changes and organization chart changes affecting trauma **must** be self-reported to the DOH.

Inter-hospital Transfer

One goal of the trauma system is to match the patient's needs with the available resources. Often, this will mean that an injured patient must be transferred to a higher level of care, or an equivalent level of care with a resource (such as orthopedic surgery) not currently available at the initial trauma facility. Repatriation agreements for patients to return to their community hospital after their initial care should also be components of transfer guidelines. In order to accomplish this goal, inter-facility transfer agreements must be developed and implemented. The value of these agreements is to design a process prior to its necessity that allows the injured patient to receive the specialty care needed.

Inter-facility transfer agreements may be facilitated by clinical transfer guidelines to be developed by sub-committees of the HTAC and RTACs.

The Trauma System performance improvement program will develop performance improvement criteria to evaluate the inter-facility transfer process.

Trauma Registry

Trauma System: Agenda for the Future, a document put forth by NHTSA, defines a trauma registry as "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." A pillar of any trauma system, the trauma registry provides a means to identify areas of educational needs and systems performance improvement, as well as measure the impact of interventions on patient outcomes.

The trauma registry selected for use in the Hawaii Trauma Registry is ImageTrend Trauma Registry™. Collection and submission of trauma data is a requirement for trauma center designation and receipt of Trauma Special Care Funds. Each participating facility will be required to collect and submit data to the state registry concurrently as ImageTrend Trauma Registry is a web-based program and concurrent data entry is a benefit of the web-based system. The DOH will work with each individual facility to determine what type of registry capability and configuration of ImageTrend™ will best fit their needs. Hardware to perform the data registry and trauma registry personnel will be provided by individual hospitals and software licensing, maintenance fees, and technical support and education will be the responsibility of the state registry. All trauma registries will utilize ImageTrend Trauma Registry™ and be on the web-based system provided by the DOH unless otherwise approved by the DOH.

Should the DOH determine that a trauma registry could use an alternate registry, the provider would have to submit data monthly to the State Trauma Registry and be responsible to ensure that the data is uploaded in the State Trauma Registry. Failure to upload trauma data to the State Trauma Registry would be a violation of the Trauma Care Special Funds and violation of both ACS and State Trauma Standards.

The minimum data set required by the state will be the National Trauma Data Bank® Elements. Other elements will be added over time based on assessed needs of the program and recommendations from the HTAC registry committee. Trauma patient inclusion criteria are outlined in Appendix B. Hospitals may determine their own inclusion criteria and data set, but must meet the minimum data set criteria. Patients included by individual hospitals but not meeting the state's inclusion criteria will be excluded from state registry. Individual hospitals will be responsible for downloaded aggregated patient data to the National Trauma Data Bank annually.

Performance Improvement in Patient Care

The development of a statewide trauma system must include a mechanism to measure, evaluate and improve the process of care and its outcome. The process must be a continuous, multidisciplinary effort to improve the effectiveness of the system processes and components including pre-hospital care (dispatch, medical control, triage, and transport), hospital care, inter-facility management, and rehabilitative care.

In addition to the multidisciplinary trauma system performance improvement programs, each entity within the system will develop a performance improvement program consistent with the rules and regulations governing the agency.

Legislation for protection from discovery already exists in HRS §624-25.5. Efforts have begun to provide similar protection for system wide inter-agency/inter-facility performance improvement programs.

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. A formal performance improvement plan and process for the statewide trauma system will be developed and entered into this section.

Performance Improvement in Patient Safety and Injury Prevention

Injury is a disease. Like many other diseases, it is predictable and preventable. The ultimate goal of an organized trauma care system is to prevent injuries.

The 2005 ACS Systems survey found that, "The injury prevention and control activities represent one of the most mature aspects of Hawaii's current trauma system. The Injury Prevention and Control Section is administered within the EMS IPCS Branch. It is well staffed and includes an injury epidemiologist."

The Injury Prevention Program underwent an independent external program review in 2003, conducted by the State and Territorial Injury Prevention Directors. Suggested goals included the following:

- Develop and implement a plan to disseminate injury data to policymakers, and provide public education about injuries as a major public health problem to develop a stronger constituency for injury prevention.

- Work with EMS providers, hospitals, other health-related organizations and the Department of Education to promote injury prevention policies on neighbor islands.

- Identify other opportunities to implement regulations or policies to promote injury prevention.

Incorporation of these goals into the statewide trauma system plan is crucial to the success of the plan. All agencies involved with the trauma system shall demonstrate collaboration with or participation in injury prevention program.

Injury Prevention Performance Improvement Initiatives

- Pedestrian Struck
    - Hawaii has one of the highest pedestrian struck death rates in the US
    - Queens Medical Center and Tripler Army Medical Center observational study
- TBI
    - Child bicycle helmets
    - Motorcycle safety classes
- Recognition of NAT
- Alcohol Checkpoints
- Child safety car seat checks
- Suicide awareness

Disaster Planning and Integration with the Trauma System

The American College of Surgeons (ACS) views trauma systems and trauma centers as integral parts of disaster preparedness. Trauma system leaders should to be actively involved in public health emergency preparedness planning to ensure that trauma system resources are integrated into state and local disaster resource plans. Ideally, EMS, the trauma system, and the all-hazards emergency medical response system will have operational trauma and all-hazards response plans and have established an ongoing cooperative working relationship to ensure trauma system readiness for all-hazards events. Relationships and working cooperation between the trauma system and public health, EMS, and local/state/federal emergency management agencies should support the provision of assets that enable a more rapid and organized disaster response when an event occurs.

The Hawaii State Trauma System should work to conduct both regional and statewide disaster mass casualty exercises at least yearly. In addition, the Hawaii State Trauma System should be a full participant in the bi-annual RIMPAC mass casualty exercise bringing local, county, state, federal and host nation partners together in a single exercise

Specialty Trauma Services

Pediatric Trauma

More children die from injury than from all other causes combined. Effective care of the injured child requires an inclusive approach which recognizes injury as a major pediatric health problem.

The most seriously injured children in Hawaii may be taken or transferred to Kapiʻolani Medical Center for Women and Children (KMCWC) or The Queen's Medical Center (QMC). Children identified in the field as Department of Defense beneficiaries and in proximity, will be taken to Tripler Army Medical Center (TAMC). These trauma centers are prepared with the resources to provide injured children with rapid assessment for injury, resuscitation and treatment as necessary, including surgery. After the initial resuscitation, patients not initially taken to KMCWC may be transferred to KMCWC, QMC, or TAMC for specialized pediatric services. There is currently an agreement between QMC and KWCMC to provide expert pediatric consultation and treatment recommendations for injured children who are patients at QMC.

Participation in the trauma system by hospitals with special pediatric resources is essential in order to effectively meet the needs of this special population. Kapiolani maintains Trauma Verification and is the state's only verified and designated Pediatric Level III Trauma Center. KMCWC currently has 24/7 pediatric general surgical, pediatric orthopedic and pediatric neurosurgical coverage allowing the majority of injured children in Hawaiʻi to be cared for at KMCWC.

Burn Trauma

Hawaii sees an average of 60 persons per year hospitalized for burn injuries. Although a relatively small number, the complexity and cost of this resource intensive specialty injury field requires inclusion in any discussion of the trauma system. There are two burn programs in Hawaii, Straub Hospital and Clinics for adult burn patients and Kapiolani Medical Center for Women and Children for burn patients 14 and under. Straub opened in 1983, the Straub Burn Unit has three critical care burn beds and serves both Hawaii and the Pacific Region. The developing trauma system recognizes the Straub Burn Unit and Kapiolani Medical Center for Women and Children as key public health resource on both a day-to-day basis and in the event of a mass casualty incident. As the statewide trauma system develops, inclusion of the Straub Burn Unit in planning and resource development will be key to the success of the system.

Pediatric Burn patients ages zero to fourteen will be treated at Kapiolani Medical Center for Women and Children in their Pediatric Burn Program that is part of the Trauma Program.

Trauma Rehabilitation

The person with disabilities from injury has special needs compared with other individuals requiring rehabilitation. Multiple trauma is a relatively new area of rehabilitation. Specialists have traditionally been trained to treat single systems but trauma can affect many systems at once: musculoskeletal, neurological, and psychological. Sudden injuries cause very different kinds of challenges than elective surgeries do. Multiple trauma patients often need not only physical rehabilitation but also psychosocial supports – and time to work through the emotional trauma. Up to 25% of patients develop Post-traumatic Stress Disorder. The nature and complexity of multiple injuries requires coordination of care as more specialists become involved. Although younger in age than the average rehabilitation patient, the trauma patient has many more issues related to return to work or school and previous family and community roles. Rehab therapy focuses on helping patients return to a quality of life as similar as possible to what they had before their injuries.

Rehabilitation Hospital of the Pacific is the only acute care medical rehabilitation organization serving Hawaii and the Pacific. It consists of 100 in-patient beds and seven outpatient clinics on Maui, Hawaii and Oahu. Neighbor Island residents requiring intensive in-patient rehabilitation must receive that care on Oahu, away from their friends and family support systems. Future planning for trauma system development must include the rehabilitation component and input from the physicians and administration at Rehabilitation Hospital of the Pacific will be contribute to the success of a plan to improve the care delivery system for injured persons in Hawaii

Funding

The goal of the DOH is to systematically distribute trauma special care funds to subsidize the cost of providing trauma care to injured patients and to encourage improvements in the resources available to injured patients. Only designated trauma centers and trauma support facilities may participate in the trauma care grants.

Funding for the development and operation of a comprehensive state trauma system has been established through the Trauma System Special Fund. Supported primarily through a tax on cigarettes, the fund is to be used to subsidize the documented costs for the statewide trauma system including but not limited to the costs of under-compensated and uncompensated trauma care incurred by hospitals and costs incurred by hospitals providing care to trauma patients to maintain on-call physicians for trauma care.

In FY 2009, funds were encumbered to subsidize some of the costs incurred by the state's only verified trauma center, The Queen's Medical Center, to support the

development of Level III Trauma Centers throughout the state, the development of a statewide trauma registry, and the development of a statewide trauma program within the Department of Health.

For FY 2010 and beyond, the intent of the DOH is to expend the funds in four separate categories:

1. Trauma Patient Care Grants
2. Trauma Participation Grants
3. Trauma Development Grants (to include workforce education)
4. Trauma System Administration

Patient Care Grants will be paid to trauma facilities to offset the costs of un-compensated and under-compensated trauma care provided to patients and the costs incurred by hospitals to maintain on-call physician rosters to provide trauma care.

Participation Grants address the costs of participating in the Hawaii State Trauma System as a trauma center, and are meant to assure a minimum level of regular funding every year. These costs can include equipment, training, supplies, and staffing.

Development Grants are intended to be distributed for specific areas needing funding such as equipment purchase to facilitate trauma care, physician recruitment and retention, and workforce education. Development Grants may also be utilized for creation of a trauma research programs.

Administration includes the cost of trauma program staff and infrastructure for facilities. To date, state trauma program staff consists of the trauma coordinator and the trauma accountant.

System Evaluation

The purpose of trauma systems is to reduce overall morbidity and mortality from injuries. A regular analysis of trauma data entered into the trauma registry is planned for evaluation of the clinical care of trauma patients.

The trauma system is fortunate to have guidelines and benchmarks developed by Health Resource Services Administration (HRSA) entitled Model Trauma Systems Planning and Evaluation. Contained in this document are 113 benchmarks for assessment of the statewide trauma system. A self-assessment should be done annually by trauma staff with the results reported to HTAC and priorities for the coming year established. It is anticipated that a repeat ACS Trauma Systems Consultation will be done within the next five years for an independent analysis of the status of the statewide trauma system.

The ACS Trauma Systems Consultation Report (Appendix E) was received in April 2017. Listed below are the identified critical areas for improvement found in the report

under Priority Recommendations. HTAC will take lead on the coordination and execution of plans to correct identified areas.

Injury Epidemiology

1. **Produce an annual Trauma System report that includes data from the pre-hospital setting, trauma registry, vital records and hospital discharge data**
    a. Individual trauma center – patient volume
        i. Full Trauma team activations
        ii. Modified Trauma team activations
        iii. Trauma consult volumes
    b. ED disposition – patient volume
        i. ED to OR
        ii. ED to ICU
        iii. ED to floor
        iv. Discharged/AMA
        v. Transfer
    c. Mechanism of Injury
        i. Blunt
        ii. Penetrating
        iii. Top e codes for hospital admission and mortality
    d. Drug Intoxication
        i. EtOH
        ii. Meth
        iii. THC
    e. Specialized patient populations
        i. Pediatric (age <15)
        ii. Pregnant
        iii. Geriatric (age $\geq$ 65)
        iv.
    f. Injury Severity
        i. Mild (0-9)
        ii. Moderate (10-16)
        iii. Severe (>16)
    g. Outcomes
        i. Mortality
        ii. Length of stay
    h. Performance Improvement metrics
    i. Injury Prevention and Outreach efforts

Assessment: Utilize current data collected through the State Trauma Registry to generate analysis. Additional available data elements (based on NTDB required fields) can be included. Data not currently collected could be added to the required fields but would require extended time for

development of standard definitions, acceptable field values, data hierarchy for extraction, education, and implementation.

Goals: Develop an Annual Trauma System report that reflects the value of our Trauma System

Timeline: Allow centers until end of February 2020 to close charts for calendar year 2019. In March 2020, generate preliminary report for review at April 2020 HTAC. Distribute final report to stakeholders.

Lead: DOH EMSIPSB and DOH TMD panel

Value: High

Feasibility: High

Statutory Authority and Administrative Rules

1. **Develop and implement rules governing the Trauma System, including but not limited to:**
    a. Structure, governance, and reporting structure of the HTAC
    b. Periodic review and update of the trauma plan
    c. Process for determining priorities in distribution of trauma funds to support state-wide Trauma System development and sustainability
    d. Field triage and ambulance destination
    e. Designation of trauma centers based on need

Assessment: Revised Trauma System Plan currently being developed; review/revise every 3 years. Field triage and ambulance destination covered by EMS standing orders and reviewed regularly. DOH EMSIP currently determines trauma center designation and funding distribution; inclusion of the State TMD panel can be considered. HTAC charter in place. HTAC is an advisory body to the DOH EMSIP; formal policies for structure and governance need to be developed.

Goals: Develop policies and procedures for HTAC

Timeline: TBD

Lead: DOH EMSIPSB and HTAC

Value: High

Feasibility: Moderate

2. **Create a broadly representative sub-council of the HTAC that will work in an advisory capacity with the Emergency Medical Services Injury Prevention Systems Branch to review all statutes and regulations pertaining to trauma with a focus on updating, developing, and/or revising sections needing attention**

Assessment: As stated

Goals: Develop a HTAC legislative sub-committee to collaborate with Kari Benes

Timeline: Immediate

Lead: HTAC and DOH legislative lead

Value: High

Feasibility: High

System Leadership

1. **Develop a process, led by the HTAC in its advisory role, to create a shared vision for the future of trauma care and Trauma System maturation in Hawaii, utilizing input from all stakeholders**

Assessment: Beyond a mission statement, a shared vision with deliverables HTAC members can commit to. Need to build trust within the Trauma System.
Goals: Discuss and develop this shared vision for our Trauma System.
Timeline: Immediate
Lead: HTAC
Value: High
Feasibility: High

2. **Restructure HTAC as a formalized advisory committee to the DOH EMSIPSB (EMSAC may serve as a model for drafting this section**)

Assessment: Chair of HTAC should be elected by the committee, with a fixed term of office, and should not be an employee of the branch. Consider use of subcommittees to address specific system components and to broaden stakeholder involvement.
Goals: Expand current HTAC Charter modeling after Title 19 321 (221-232)
Timeline: HTAC subcommittees developed and HTAC Chair now elected by committee in accordance with HTAC charter. HTAC Chair is not-employed by DOH EMSIPSB. Reporting structure of HTAC to DOH addressed in section 2 above.
Lead: DOH EMSIPSB
Value: High
Feasibility: Moderate

Lead Agency

1. **Create full-time dedicated staff for positions of State Performance Improvement coordinator and State Trauma Registrar/Data Manager**

Assessment: Would be of great benefit to assist with and ensure data integrity and analysis in the State Trauma registry as well as coordinate system improvement. Managed by DOH EMSIPSB. Assessment of available funding followed by development of job descriptions, posting, hiring in accordance with State regulations.
Goals: Hire a State Trauma PI coordinator and a State Trauma Registrar/Data Manager
Timeline: TBD
Lead: DOH EMSIPSB

Value: High
Feasibility: Low

Trauma System Plan

1. **Assemble a multidisciplinary trauma task force, under the HTAC, to review, and suggest updates to the draft FY 2016 Trauma System Plan**

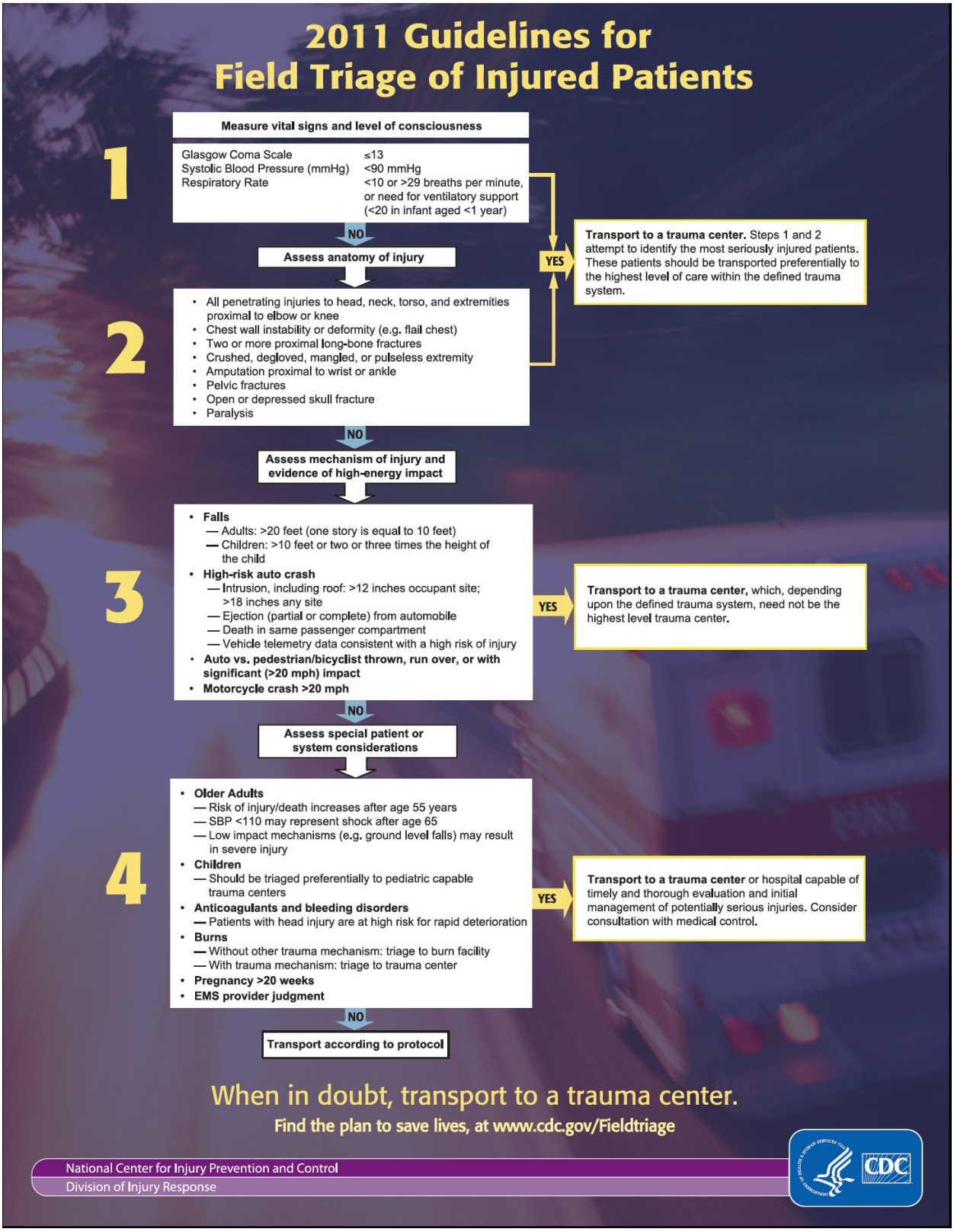
Assessment: Ensure the plan is consistent with the current standards of trauma care. Align the plan with the current statutes and all Trauma System protocols. Complete the review, update, and attain approval of the report in a timely manner. Include a grid for goals, objectives, timelines, and responsible person/ lead. Disseminate the plan to all Trauma System stakeholders
Goals: Develop and maintain Hawaii Trauma System Plan
Timeline: present current draft at November 2019 HTAC
Lead: HTAC System Plan subcommittee
Value: High
Feasibility: High

System Integration

1. **Explore creative options, including tele-medicine and other technologies, to provide consultation, follow-up care, and rehabilitation to enable more patients to remain on their home island**

Assessment: Telemedicine legislation in place with potential to build off existing stroke equipment/platform.
Goals: Need to recruit specialists willing to provide telemedicine consultations
Timeline: TBD
Lead:
Value: High
Feasibility: High
Need to recruit specialist willing to provide telemedicine

Appendix A


2011 Guidelines for
Field Triage of Injured Patients
1
Measure vital signs and level of consciousness
Glasgow Coma Scale ≤13
Systolic Blood Pressure (mmHg) <90 mmHg
Respiratory Rate <10 or >29 breaths per minute, or need for ventilatory support (<20 in infant aged <1 year)
NO
YES
Transport to a trauma center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the defined trauma system.
Assess anatomy of injury
2
All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
Chest wall instability or deformity (e.g. flail chest)
Two or more proximal long-bone fractures
Crushed, degloved, mangled, or pulseless extremity
Amputation proximal to wrist or ankle
Pelvic fractures
Open or depressed skull fracture
Paralysis
NO
YES
Assess mechanism of injury and evidence of high-energy impact
3
Falls
— Adults: >20 feet (one story is equal to 10 feet)
— Children: >10 feet or two or three times the height of the child
High-risk auto crash
— Intrusion, including roof: >12 inches occupant site; >18 inches any site
— Ejection (partial or complete) from automobile
— Death in same passenger compartment
— Vehicle telemetry data consistent with a high risk of injury
Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact
Motorcycle crash >20 mph
NO
YES
Transport to a trauma center, which, depending upon the defined trauma system, need not be the highest level trauma center.
Assess special patient or system considerations
4
Older Adults
— Risk of injury/death increases after age 55 years
— SBP <110 may represent shock after age 65
— Low impact mechanisms (e.g. ground level falls) may result in severe injury
Children
— Should be triaged preferentially to pediatric capable trauma centers
Anticoagulants and bleeding disorders
— Patients with head injury are at high risk for rapid deterioration
Burns
— Without other trauma mechanism: triage to burn facility
— With trauma mechanism: triage to trauma center
Pregnancy >20 weeks
EMS provider judgment
NO
YES
Transport to a trauma center or hospital capable of timely and thorough evaluation and initial management of potentially serious injuries. Consider consultation with medical control.
Transport according to protocol
When in doubt, transport to a trauma center.
Find the plan to save lives, at www.cdc.gov/Fieldtriage
National Center for Injury Prevention and Control
Division of Injury Response
CDC

Amendment to current Oahu Ambulance Transportation Guidelines – Section III

G. Trauma – Field Triage of the Injured Patient

1. Triage of the Trauma patient will follow the Categories 1-4 as outlined below.
2. Department of Defense (DOD) trauma patients include active duty, retirees, and their dependents.
3. Category 1 Adult and Pediatric
    a. Non-DOD Adult and Pediatric trauma patients are transported to The Queen's Medical Center Punchbowl (Level I).
    b. DOD Adult and Pediatric trauma patients are transported to the nearest Level I or II trauma center
        i. Metropolitan and East Oahu to The Queen's Medical Center Punchbowl (Level I)
        ii. West, Central, Northshore Oahu to Tripler Army Medical Center (Level II).
4. Category 2 Adult and Pediatric
    a. Non-DOD Adult and Pediatric trauma patients are transported to The Queen's Medical Center Punchbowl (Level I).
    b. DOD Adult and Pediatric trauma patients are transported Tripler Army Medical Center (Level II).
5. Category 3
    a. Adult
        i. Non-DOD trauma patients are transported to either Pali Momi Medical Center (Level III) or The Queen's Medical Center Punchbowl (Level I).
        ii. DOD patients are transported to Tripler Army Medical Center (Level II).
    b. Pediatric (age 14 and under)
        i. Non-DOD trauma patients are transported to either Kapiolani Medical Center for Women and Children (Level III) or The Queen's Medical Center Punchbowl (Level I).
        ii. DOD trauma patients are transported to Tripler Army Medical Center (Level II).
6. Category 4
    a. Adult
        i. Non-DOD trauma patients may be transported to any 911 receiving facility.
        ii. DOD trauma patients are transported to Tripler Army Medical Center (Level II).
    b. Pediatric
        i. Non-DOD trauma patients are transported to either Kapiolani Medical Center for Women and Children (Level III) or The Queen's Medical Center Punchbowl (Level I).
        ii. DOD trauma patients are transported to Tripler Army Medical Center (Level II).
7. Trauma patients in cardiac arrest:
    a. Trauma patients in asystole on scene may be pronounced on scene.
    b. Trauma patients in PEA or other non-perfusing rhythms should be transported to the nearest facility.

TABLE 4: TRAUMA FIELD TRIAGE GUIDELINES			
CATEGORY	**PATIENT TYPE**	**NON-DOD**	**DOD**
1	Adult & Pediatric	QMC-PB (Level I)	QMC-PB (Level I) TAMC (Level II)
2	Adult & Pediatric	QMC-PB (Level I)	TAMC (Level II)
3	Adult	QMC-PB (Level I) PM (Level III)	TAMC (Level II)
	Pediatric	QMC-PB (Level I) KMCWC (Level III)	
4	Adult	Any 911 receiving facility	TAMC (Level II)
	Pediatric	KMCWC (Level III)	
Unstable for transport, impending respiratory failure or cardiac arrest	Adult & Pediatric	Nearest appropriate ED	

Pediatric = age 14 years old and younger

QMC-PB = The Queen's Medical Center Punchbowl (Level I)

TAMC = Tripler Army Medical Center (Level II).

KMCWC = Kapiolani Medical Center for Women and Children (Level III)

PM = Pali Momi Medical Center (Level III)

Appendix B

TRAUMA REGISTRY INCLUSION CRITERIA

State Trauma Program
Emergency Medical Services and Injury Prevention System Branch
Hawaii State Department of Health

Wednesday, September 2, 2020

HAWAII TRAUMA REGISTRY INCLUSION CRITERIA
Effective January 1, 2021

Patients to be included in the State of Hawaii Trauma Registry

Data on patients meeting the criteria listed in this document is to be collected by Level I-III Trauma Centers and placed into the Hawaii Trauma Registry. National Trauma Database (NTDB) is the largest aggregation of U.S. trauma registry data. NTDB defines the National Trauma Data Standard (NTDS) Data Dictionary which is designed to establish a national standard for trauma registry data. NTDS is updated annually. Hawaii trauma registry inclusion criteria shall update annually to remain in compliance with the NTDS schedule.

A trauma patient is defined as a patient who:

- Meet NTDS inclusion criteria

  OR

- Had a trauma activation (full or modified) initiated on their behalf.

Appendix C
Trauma Plan Definitions

ImageTrend Trauma Registry - The trauma registry program used by the State of Hawaii and all participating and designated trauma facilities in Hawaii.

Credentialing – Approval of a physician as a member of the trauma team based on a review of the individual's training and experience by the trauma service director.

Designation – a formal determination of the Department of Health that hospitals or health care facilities are capable of providing trauma services within a trauma system.

Director – The Director of the Department of Health or the assigned designee. The director is the legally responsible entity for the statewide trauma system

EMS Providers

Immediately Available – Present within 5 minutes of the arrival of the injured patient. It is presumed that the team members with this requirement are in-house, and is tracked by a quality improvement indicator with the minimum acceptable compliance of 80%.

Injury Severity Score (ISS)–the sum of the squares of the Abbreviated Injury Scale (AIS—an anatomic severity scoring system) scores of the three most severely injured body regions. This is a widely accepted process for quantifying severity of injury based on discharge diagnoses.

Inter-facility Transfer – A facility's medical staff may determine that the injured patient's needs cannot be met by the facility. The patient is then transferred to a facility able to meet the patient's needs. The process is based on pre-determined criteria and formal transfer agreements.

Level I Trauma Center – provides definitive comprehensive surgical and medical care for multi-system trauma patients. Trauma-trained emergency physicians and registered nurses are in-house and immediately available to the trauma patient within 5 minutes to initiate resuscitation and stabilization. A trauma trained general surgeon is immediately available to direct patient care. A wide range of specialists, diagnostic capabilities and support services are available. A Level I center must conduct applicable trauma research and injury prevention activities, provide statewide professional and community education and consultative community outreach services. A Level I facility must be verified by a survey conducted by the American College of Surgeons. A Level I facility must be designated by the State of Hawaii, DOH EMS IPSB.

Level II Trauma Center – provides definitive comprehensive surgical and medical care for multi-system trauma patients. Trauma trained emergency physicians and nurses are immediately available, and a general surgeon with trauma credentials is in the department upon trauma patient arrival with adequate notification from the field. The

maximum acceptable response time is 15 minutes, tracked from the patient's arrival. The program must demonstrate that the surgeon's presence is in compliance at least 80% of the time. A wide range of specialists, diagnostic capabilities and support services are available. A Level II center must conduct injury prevention activities, and provide for professional and community education and consultative community outreach services. A Level II facility must be verified by a survey conducted by the American College of Surgeons. A Level II facility must be designated by the State of Hawaii, DOH EMS IPSB.

Level III Trauma Center – should have the capability to initially manage the majority of injured patients and have transfer agreements with a Level I or Level II trauma center for patients that exceed their resources. A Level III facility must have continuous general surgery coverage. Trauma trained emergency physicians and nurses must be immediately available for resuscitation. The trauma credentialed general surgeon must be promptly available to the resuscitation. It is expected that the surgeon will be present in the resuscitation area upon trauma patient arrival with adequate notification from the field. The maximum acceptable response time is 30 minutes, tracked from patient arrival. The program must demonstrate compliance 80% of the time. Specialists may be available and standard diagnostic and support services are provided. Guidelines for patient transfer or retention should be well-defined. Injury prevention and control, outreach activities to the local community and education programs for healthcare providers should be part of a Level III trauma program. A Level III facility may opt to seek verification from the American College of Surgeons or the state DOH. A Level III facility must be designated by the State of Hawaii, DOH EMS IPSB.

National Trauma Data Bank (NTDB) - The NTDB is the largest aggregation of trauma registry data ever assembled. It contains over 2 million records from trauma centers in the U.S. and Puerto Rico. The goal of the NTDB is to inform the medical community, the public, and decision makers about a wide variety of issues that characterize the current state of care for injured persons.

National Trauma Data Standard (NTDS) – A uniform set of trauma registry variables and associated variable definitions to be used when entering data into the NTDB.

Promptly Available – Present within 30 minutes of the arrival of the injured patient. Tracked by a quality improvement indicator with acceptable compliance ≥ 30 minutes. In-house call is not necessary providing that the response time meets the indicator criteria.

System Status-

Trauma Registry – database to provide information for analysis and evaluation of the quality of patient care, including epidemiologic and demographic characteristics of trauma patients.

Trauma Support Hospital – Some hospitals, due to the specialized services that they provide (pediatrics or burns, for example) may receive injured patients in transfer from other facilities including trauma centers. Hospitals that agree to take injured patients in transfer from other facilities will be eligible to receive a proportionate share of the trauma care grants based upon the same formula used for trauma centers. These hospitals must also contribute data to the trauma registry.

Trauma Trained Nurse – Education requirements to be determined by the HTAC and the DOH.

Trauma Trained Physician – Education requirements to be determined by the HTAC and the DOH

Under-triage – severely injured patients are transported to lower level trauma centers or non-designated hospitals.

Appendix D
Hawaii Trauma Advisory Council
Charter

Injury, the leading cause of death and disability in those under 45, can be positively impacted by the implementation of a comprehensive statewide system of response. Act 305, Hawaii Session Laws 2006, established the trauma special fund and directed the Department of Health to use these funds to develop, implement and operate a comprehensive statewide trauma system designed to reduce death and disability from injury across the state. In fulfilling that responsibility, the Legislature directed the Department to convene meetings as follows:

> **SECTION 6. (a) The department of health shall convene ad hoc committees to advise the department in all matters related to trauma care, including system standards, appropriate expenditure of the trauma system special fund, and system performance and evaluation criteria.**
> **(b)Members of the ad hoc committees shall include members of the state EMS advisory committee and may invite participation statewide from practicing trauma surgeons and other trauma specialty physicians and nurses, pre-hospital personnel, hospital administrators, third party payors and other interested parties from all counties.**

After legislation directing tobacco taxes into the trauma special fund and the first appropriation of funds in fiscal year 2009, the Department of Health Emergency Medical Services and Injury Prevention System Branch (DOH-EMSIPSB) established the Hawaii Trauma Advisory Council (HTAC) to fulfill Section 6 of Act 305 and guide trauma system development. Since that time HTAC has played an instrumental role in the implementation of a comprehensive statewide trauma system. This Charter will set forth more specifically the operating procedures that will govern HTAC in the future.

Article I
Vision

To ensure all trauma patients within the State of Hawaii receive quality comprehensive trauma care aligned with national trauma standards.

Article II
Mission

To systematically improve trauma care in Hawaii through collaborative programs of injury prevention, optimal treatment, research, education and outreach.

Article III
Duties of the Council

The Hawaii Trauma Advisory Council (HTAC) holds regular meetings inclusive of a broad and representative array of multidisciplinary trauma stakeholders to disseminate

information and advise the State of Hawaii Department of Health on all matters related to the comprehensive statewide trauma system including but not limited to:

- Identify and make recommendations regarding trauma service needs across the state.
- Recommend appropriate standards and processes for verification and designation for trauma centers in Hawaii based on standards set by the American College of Surgeons Committee on Trauma (ACS-COT).
- Review and make recommendations for trauma pre-hospital triage and transfer guidelines consistent with ACS-COT recommendations and statewide resources.
- Evaluate trauma registry reports and make recommendations for improvements to the state trauma registry.
- Review and approve proposed statutes, rules or other regulations pertinent to trauma system operations.
- Evaluate Hawaii's trauma system performance against HRSA Model Trauma System benchmarks and ACS-COT system standards. Make recommendations for system improvements and regularly re-evaluate progress against benchmarks.
- Evaluate a variety of sources of data to assess statewide performance outcomes leading to suggestions for statewide improvement initiatives.
- Conduct multi-facility case reviews to identify patient care challenges, exchange best practices among trauma care providers, and identify opportunities to improve patient care and the trauma system.
- Review programs and make recommendations regarding trauma education for the system workforce.
- Review trauma sub-specialty care across the state and identify opportunities for greater access to specialists.
- Review and make recommendations to the Department regarding the allocation and expenditure of funds for the development and improvement of the statewide trauma system.
- Regularly review and make recommendations to update the Hawaii Trauma System Plan
- Advocate to the Legislature and the public for continued support and resources for a comprehensive statewide trauma system.

Article IV
Membership

HTAC promotes an inclusive approach for the Hawaii trauma system and opens meetings to individuals throughout the state interested in achieving its mission. As set forth by HRSA Model System planning and ACS-COT guidance, a successful trauma

system is supported by a broad coalition of engaged stakeholders. Given the broad responsibilities of HTAC, inclusion of a variety of perspectives is essential for success but must be balanced with the need to limit the number of voting members for effective conduct of business.

The input from stakeholders in each component is needed to assure a comprehensive system. The following groups are encouraged to participate though they may not have voting rights. Neurosurgeons, Orthopedic Surgeons, Emergency Physicians (ACEP), Burn specialists, Rehabilitation specialists and other specialists, private ground and air ambulance providers, and other agencies such as the Hawaii Emergency Management Agency, John A. Burns School of Medicine, Healthcare Association of Hawaii, Emergency Nurses Association, Hawaii Paramedic Associations, Office of Rural Health, Emergency Medical Services for Children, Injury Prevention Advisory Committee, Keiki Injury Prevention Coalition, Governor's Traffic Safety Committee, Traumatic Brain Injury Association, government officials from the Legislature, third party payers and consumers.

Representatives from trauma centers that are designated in the comprehensive statewide trauma system are expected to attend HTAC meetings whether they are voting members or not.

Voting members represent a subset of key stakeholders who are responsible for the achievement of HTAC responsibilities with the assistance of non-voting members. Sub-committees of HTAC may include any interested parties or content experts with the exception of case reviews which may be closed according to system rules.

The voting membership of HTAC is comprised of a multidisciplinary membership representative of both rural and urban trauma perspectives as follows:

- The State Emergency Medical Services Advisory Committee (EMSAC) Chair shall be an ex officio voting member. In addition to the Chair, EMSAC shall nominate a representative from each county provided that at least one is an emergency physician. Should an EMSAC nominee be unable to complete their term EMSAC shall nominate someone to take their place.

- Each state designated trauma center/receiving facility (Tripler included) will have one voting member who shall be either the Trauma Medical Director or Trauma Program Manager. Should the voting member leave their position prior to the end of the term the counterpart position (Medical Director or Trauma Program Manager) shall become the voting member. Should both of those positions be

unfilled, the facility may designate another person as a temporary representative for a limited time with the Chair's approval.

- The Chair and Vice Chair shall be elected by the above named voting members.

Proxy votes shall not be allowed except by pre-approval of the Chair.
Proxy votes shall not be allowed except by pre-approval of the Chair.
The terms of the voting members shall be two years. A voting member shall be limited to not more than two consecutive terms, but may once again become a voting member after abstaining for one term.
A voting member who has more than two consecutive unexcused absences or more than two unexcused absences in a year shall be deemed to have vacated their membership and shall be replaced via the mechanism for initial voting member selection.
Employees of the Department of Health may not serve as voting members.

Article V
Officers and Executive Administrator

The HTAC shall elect a Chairperson and a Vice-Chairperson who will serve two year terms. A non-elected Executive Administrator will provide logistical support to HTAC. The Chairperson will preside at HTAC meetings, monitor conduct and enforce policies during meetings. The Chairperson will give final approval to the agenda for each meeting and will be responsible to ensure that meetings address the major duties of HTAC. The Chairperson will solely be responsible for granting excused absences to voting members and approving proxy votes. The Chairperson will also be responsible for official communication of any recommendations to the Department or other entities voted on by HTAC.
The Vice-Chairperson will preside at HTAC meetings in the absence of the Chairperson and perform other duties the Chairperson may request.
The Executive Administrator for HTAC is a non-elected officer of HTAC who will be the Department of Health EMSIPSB Branch Chief or designee. The Executive Administrator shall:

- Maintain a list of HTAC invitees and voting members including participants in subcommittees
- Notify HTAC members of the time and place of HTAC meetings and meetings of the HTAC sub-committees
- Record, maintain and distribute accurate minutes of HTAC quarterly meetings and special meetings (not responsible for subcommittee minutes);
- Distribute the minutes of the previous meeting, the agenda of an upcoming meeting and any supplemental materials approved by the

Chairperson pertaining to such meetings at least ten working days prior to the meeting date

- Track attendance at HTAC meetings and report any unexcused absences of voting members to the Chairperson.

- Provide travel support for meeting attendance to voting members whose travel is not otherwise supported.

In the absence of both the Chairperson and Vice-chairperson at any meeting the voting members present shall elect a chair to serve for that meeting only.

New officers will be elected every two years.

Article VI
Meetings

- The Council shall meet at least quarterly at the call of the Chairperson.

- The presence of 7 voting members at HTAC constitutes a quorum.

- Additional meetings may be added at the discretion of the Chairperson and/or requested by at least 7 voting members of HTAC.

Article VII
Subcommittees and Ad Hoc Committees

The business of the HTAC will be conducted through regular quarterly meetings of the full Council but also will utilize smaller groups established to provide guidance to HTAC, the Department, or both. Sub-committees that meet regularly are established to address specific areas of responsibility under the HTAC duties. Subcommittees may include non-members but shall include at least one voting member of HTAC. Subcommittees may be deleted or added by majority vote of HTAC. HTAC may also establish Ad Hoc committees to address specific issues or tasks. These committees are established and dissolved as needed to further the business of HTAC.

Article VIII
Voting

Voting on election of members, officers and official recommendations of HTAC to the Department or other entities shall require a quorum and be by majority vote of those present. No proxy or absentee voting shall be allowed except under special

circumstances with the approval of the Chairperson. In any instance in which a majority vote is called for the Chairperson may call for a show of hands and such voting method shall determine the result of the vote. Or the Chairperson may decide a written ballot is more appropriate than a show of hands. Any voting member may request the use of secret ballot on any matter called for a vote.

ARTICLE IX
Amendment of Charter

This charter may be amended at a meeting of the HTAC by majority vote provided that such amendment was submitted to the Chairperson and the Executive Secretary and remitted to all members at least ten working days prior to the meeting at which such amendment is to be offered. Adopted amendments shall take effect immediately upon adoption.

ARTICLE X
Parliamentary Authority

The latest edition of ROBERT'S RULES OF ORDER NEWLY REVISED shall govern the Council, its committees, subcommittees and ad hoc committees wherever they are applicable and not inconsistent with other provisions of this Charter, Hawaii Revised Statutes and Hawaii Administrative Rules.

Appendix E
ACS TSC Report
PRIORITY RECOMMENDATIONS

Injury Epidemiology

- Produce an annual Trauma System report that includes data from the pre-hospital setting, trauma registry, vital records and hospital discharge data
- Aggregate by geographic area, high risk populations and mechanism of injury
- Include injury severity and non-mortality outcome measures
- Develop report section identifying the top e codes for hospital admission and mortality

Statutory Authority and Administrative Rules

- Develop and implement rules governing the Trauma System, including but not limited to:
    - Structure, governance, and reporting structure of the HTAC
    - Periodic review and update of the trauma plan
    - Process for determining priorities in distribution of trauma funds to support state-wide Trauma System development and sustainability
    - Field triage and ambulance destination
    - Designation of trauma centers based on need
    - Create a broadly representative sub-council of the HTAC that will work in an advisory capacity with the Emergency Medical Services Injury Prevention Systems Branch to review all statutes and regulations pertaining to trauma with a focus on updating, developing, and/or revising sections needing attention

System Leadership

- Develop a process, led by the HTAC in its advisory role, to create a shared vision for the future of trauma care and Trauma System maturation in Hawaii, utilizing input from all stakeholders
- Restructure HTAC as a formalized advisory committee to the EMSIPSB of DOH (Emergency Medical Services Advisory Council may serve as a model for drafting this section) **o** Chair of HTAC should be elected by the committee, with a fixed term of office, and should not be an employee of the branch
- Consider use of subcommittees to address specific system components and to broaden stakeholder involvement

Lead Agency

- Create full-time dedicated staff for positions of state Performance Improvement Coordinator and State Trauma Registrar/ Data Manager
- Develop comprehensive job descriptions for trauma-related positions within EMSIPSB

Trauma System Plan

- Assemble a multidisciplinary trauma task force, under the HTAC, to review, and suggest updates to the draft FY 2016 Trauma System Plan
- Ensure the plan is consistent with the current standards of trauma care
- Align the plan with the current statutes and all Trauma System protocols
- Complete the review, update, and attain approval of the report in a timely manner
- Include a grid for goals, objectives, timelines, and responsible person/ lead
- Disseminate the plan to all Trauma System stakeholders

System Integration

- Explore creative options, including tele-medicine and other technologies, to provide consultation, follow-up care, and rehabilitation to enable more patients to remain on their home island

Financing

- Evaluate use of trauma funds and allocate as needed to be sure trauma funds are optimally supporting the future goals and direction established by the updated Trauma System Plan
- Work with the legislature to ensure that a stable funding source for the Trauma System is secured. Funding should be sufficient to support system operation and future development as outlined in the State Trauma System Plan

Prevention and Outreach

- Involve the tourism/ hospitality industry in prevention initiatives

Emergency Medical Services

- Amend EMS Statute to integrate aeromedical services as a vital component of the State Comprehensive Emergency Medical Services System. o Authorize DOH to contract for services and bill third-party payers for reimbursement

Definitive Care Facilities

- Determine the optimal level and number of trauma centers, based on population need and system capacity. Metrics might include anticipated volume, available resources, and geography
- Support the development of a Level I or a second Level II trauma center at the facility found to be most appropriate to meet population need as determined by the trauma designation process

- Engage all non-designated acute care facilities in regional and state-wide trauma advisory council activities, including Performance Improvement initiatives.

Disaster Preparedness

- Conduct an assessment of the Trauma System's ability to expand its capacity to respond to MCIs in an all-hazards approach
- Conduct a gap analysis based on the assessment for trauma emergency preparedness

System-Wide Evaluation and Quality Assurance

- Create a Trauma System PI Master Plan, guided by HTAC in its advisory role
- Assemble a multidisciplinary ad-hoc workgroup, drawn from the stakeholder community to expedite completion
- Attain approval within 12 months
- Disseminate this plan to the Trauma System stakeholders

Trauma Management Information Systems (MIS)

- Establish the position of State Trauma Registrar. Responsibilities should include:
    - Data validation
    - User support for registry use and data entry
    - Ability to create reports for individual centers and at the system level
    - Management of additional data fields for specific system projects
- Consider establishment of a centralized pool of trauma registrars that would be responsible to assist with data entry and report writing at all acute care facilities
- Begin using registry data to look at system performance now. Initial focus might include:
    - Details on patients transferred to higher level of care to ensure timeliness and appropriateness
    - Details on patients kept at Level III centers to compare clinical outcomes to similar patients transferred to higher level centers, either within the state or nationally

Appendix F
DOCUMENT CHANGE LOG

Date	Page	Comment
2/19/2021	9	Acute Care Facilities; clarifying language
2/19/2021	17	Pediatric Trauma; clarifying language, pediatric neurosurgical coverage
2/19/2021	15	Performance Improvement; placeholder to insert PI Plan
2/19/2021	7	Regional Trauma Advisory Councils; updated structure
2/19/2021	8	Sub-councils; section added
2/19/2021	8	Pediatric sub-council; section added
2/19/2021	3	Table of Contents corrected
5/21/2021	9	Disaster sub-council; section added