

REPORT TO THE TWENTY-FOURTH LEGISLATURE  
STATE OF HAWAII  
2007

PURSUANT TO HOUSE CONCURRENT RESOLUTION NO. 88, SENATE DRAFT 1  
OF THE 2006 LEGISLATIVE SESSION, REQUESTING THE DIRECTOR OF  
HEALTH TO DEVELOP A TRAUMA SYSTEM PLAN FOR HAWAII

PREPARED BY:  
STATE OF HAWAII  
DEPARTMENT OF HEALTH  
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## EXECUTIVE SUMMARY

In accordance with House Concurrent Resolution 88, SD1, of the 2006 Legislative Session, the Department of Health is submitting a report to the 2007 Legislature describing the progress made in the development of a statewide comprehensive "trauma system plan" (TSP) for Hawaii. Trauma (hereinafter used interchangeably with "injury") is the leading cause of death in Hawaii among individuals 1-44 years of age and causes many permanent disabilities.(Appendix A) This unacceptable burden of injury can be mitigated by the development of a statewide comprehensive trauma system.

This contention is supported by the October 2005 Report of the American College of Surgeons (ACS) Committee on Trauma which provided an expert multi-disciplinary panel's objective assessment of Hawaii's existing trauma care system. This report used a widely accepted framework that has since been published by the U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA) as the "2006 Model Trauma System Planning and Evaluation". The Department has used this HRSA document and the findings of the ACS team, as its guide to trauma system planning and development.

The Department initiated its development of a statewide trauma system with establishment of an Ad Hoc Trauma Sub-Committee (AHTC) of the State Emergency Medical Services Advisory Committee, as was recommended in the ACS report. The AHTC has begun its review of the status of trauma care statewide, with specific intensive evaluation of trauma care services on the Neighbor Islands. Included in this initial assessment were on-site visits and written questionnaires that addressed both clinical and financial challenges faced by providers and institutions alike. Data from this initial assessment is being analyzed to determine existing strengths, weaknesses, opportunities, and impediments to the creation of an effective statewide trauma care system.

This report updates the current status of existing trauma system components and describes the progress the State has made in achieving some of the recommendations of the ACS report. It also points to recommendations yet to be addressed, and to continuing challenges to progress in the development of an effective comprehensive trauma system.

In the coming year the Department will continue to work with the AHTC and with stakeholders at the State and County levels to promote ongoing development of the trauma plan. Increased community interest in building a better trauma system is evident and should serve to produce improvements by collective action.

**REPORT TO THE LEGISLATURE  
IN COMPLIANCE WITH H.C.R. NO. 88, S.D. 1**

In accordance with House Concurrent Resolution No. 88, S.D. 1 (H.C.R. 88) of the 2006 Legislative Session, the Department of Health is submitting a report to the 2007 Legislature that outlines the Department's progress on the development of a comprehensive trauma system plan for Hawaii (TSP).

H.C.R. 88 gave direction for this report as follows:

“BE IT RESOLVED by the House of Representatives of the Twenty-third Legislature of the State of Hawaii, Regular Session of 2006, the Senate concurring, that the Director of Health is requested to develop a comprehensive trauma system plan for Hawaii that encompasses all of the major islands and includes cost estimates; and

BE IT FURTHER RESOLVED that the Director of Health involve representatives of all relevant agencies and organizations, both public and private, in the development of the trauma plan; and

BE IT FURTHER RESOLVED that the Director of Health is requested to submit a trauma plan to the Legislature no later than twenty days prior to the convening of the Regular Session of 2007; and

BE IT FURTHER RESOLVED that certified copies of this Concurrent Resolution be transmitted to the Governor, the Mayors of Hawaii, Honolulu, Kauai, and Maui, the Director of Health, the Chief Executive Officer of the Healthcare Association of Hawaii, the Chief Executive Officer of the Hawaii Medical Association, and the Chief Executive Officer of the Queen's Medical Center.”

**Introduction**

Trauma (hereinafter used interchangeably with “injury”) is the leading cause of productive years of life lost costing Hawaii many lives and millions of dollars each year. It is increasingly recognized as being the neglected disease of modern society. The problem of trauma must be addressed with a systematic, comprehensive, coordinated, approach before the current tremendous toll on society can be reduced.

The Legislature's recognition of the need for a comprehensive trauma system for Hawaii led to passage of H.C.R. 88 requesting the Department to develop a comprehensive trauma system plan for Hawaii (TSP). The Department's Emergency Medical Services and Injury Prevention System Branch (EMSIPSB) is the program tasked with the development of the TSP. EMSIPSB encouraged the State Emergency Medical Services Advisory Committee (EMSAC), established by H.R.S. 321-221, to form the Ad Hoc Trauma Planning Committee (AHTC) to provide a forum for interested members of

EMSAC and additional stakeholders to come together to assist the Department in further trauma system planning and development. The AHTC met for the first time April 18, 2006 and continues to meet on a regular basis. (Attendees and Meetings Appendix B)

The Department has chosen to follow the **2006 Model Trauma System Planning and Evaluation** developed by the U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA) as a guideline to building the TSP. (1) The HRSA trauma system definition follows:

“A trauma system is a pre-planned, comprehensive, and coordinated statewide and local injury response network that includes all facilities with the capability to care for the injured. It is the system’s inclusiveness, or range of pre-planned trauma center and non-trauma center resource allocation, that offers the public a cost-effective plan for injury treatment. In such an effective system, trauma care delivery is organized through the entire spectrum of care delivery, from injury prevention to pre-hospital, hospital, and rehabilitative care delivery for injured persons. The system begins with a State’s authority to designate various levels of trauma and burn centers and, through data collection and analysis processes, demonstrates its own effectiveness time and time again.” (Executive Summary, Page 1.)

The process recommended by HRSA involves a thorough assessment of current capabilities through all core functions using the state self-assessment tool they have developed. The assessment of progress on key benchmarks developed for a mature trauma system are tied to the core functions of public health in a model provided in (Appendix C) . These benchmarks for each key component of a mature statewide trauma system serve to assist in measuring progress in specific areas.

As reported to the Legislature by the Department last year in our report on H.C.R. No. 229, HD1, SD1, 2005 Hawaii Legislative Session, the American College of Surgeons, Committee on Trauma (ACS) was previously invited by the Department to evaluate Hawaii’s trauma system. The ACS report of October 2005, Trauma System Consultation State of Hawaii (Executive Summary Appendix D), provided an expert multi-disciplinary panel’s objective assessment of Hawaii’s status based on the same infrastructure benchmarks that have been formalized in the HRSA document (2).

Because of the 2005 ACS report, the planning phase for trauma system development was provided valuable recommendations that fit into the HRSA model framework. It is important to note that the time available to the team did not allow for a complete assessment of all system components as recommended by the HRSA guide. More detailed information is needed about emergency departments, hospitals, physicians and other essential human resources necessary for trauma services, as well as the costs of providing sufficient services for an effective trauma system. In addition, some findings reported in the ACS consultation report were inaccurate, such as the incorrect description of the physician services at Hilo Medical Center (Erratum Sheet Appendix E).

Progress on the development of the statewide TSP has been made primarily with the establishment of the AHTC and the initiation of a more thorough assessment of the current status of acute care trauma services. The counties are forming their own trauma advisory committees in order to accelerate local planning efforts, and to inform the process with input from community stakeholders.

Many of the challenges to trauma system development identified in the 2005 ACS consultation report remain. A review of the degree to which some of the report's key recommendations have been implemented affirms that measurable progress has been made. This report reviews the current status of system components, and describes anticipated activities needed for the completion of a TSP.

### **TSP: Administrative Components**

The ACS review and report on Hawaii's trauma system in 2005 noted in its Executive Summary at page 8:

“Progress in trauma system development in Hawaii has been slow and inconsistent. Factors contributing to this include intermittent federal funding, limited state and municipal funding, the lack of sustained physician leadership, limited participation in trauma system development by physicians, institutions and municipal agencies at the island/regional level, and the lack of a centralized and appropriately staffed trauma system oversight structure with the authority to implement system improvements.”

Recognizing the infrastructure prerequisite for successful trauma system development, the ACS executive summary had many key recommendations in the administrative area, more than in any other category.

The administrative recommendations of the ACS report that have been accomplished include the filling of the vacant program manager's position, formation of the AHTC, the investigation of other State trauma system plans and funding practices, and the beginning of county trauma planning committees.

Progress in other administrative areas has been hampered by the EMSIPSB's lack of human and financial resources. The ACS made the following observation on page 16 of their report after review of the Department's organization chart, relevant statutes, administrative rules, EMSIPSB budget, and personnel position descriptions:

“...the two positions for EMS system program are not adequate to perform the work of a lead agency for EMS. The work includes credentialing of all practitioners, inspection of ambulances, system evaluation, training and education, budget management, regional/district operations on neighboring islands. This work may require several more positions just to meet the statutory requirements. The proposed trauma system development tasks identified in this report are significant and should be considered above and beyond existing

statutory commitments. It cannot be accomplished with the EMS Branch structured and staffed, as it presently exists.”

EMS currently has more vacant positions than it did at the time of the ACS review, without any new positions or funds to address trauma system development. Although the vacant Branch Chief position has been filled, other key positions are vacant including that of the EMS research statistician who left in August of 2006. Therefore, one of the key recommendations to be accomplished is:

“Assess the needs and organization of the state EMSIPSB to assure that the office has the staff and resources to meet the expectations and requirements defined in the statute and plans, including a position with specific responsibilities for the development of a comprehensive statewide trauma system.”

### **Legislation**

The current statutes, section 321-221, Hawaii Revised Statutes (HRS), et seq. for Emergency Medical Services, have broad language under which current planning activities for system development may be conducted. The recommendation of the ACS report to: “Update the EMS statute and regulations to include clear language regarding trauma system development, administration and representation on the State EMS Advisory Committee,” has partially been accomplished. The 2006 Legislative session saw the passage of H.C.R. 88 and Act 305, Session Laws of Hawaii (SLH) 2006 establishing the Trauma Special Fund (TSF) under the Department’s authority. There was no specific additional authority given to the Department regarding trauma system oversight or other specific amendments to section 321-221, HRS, et seq., nor were any funds appropriated to the TSF. The 2006 Legislature did direct through Act 316 that a portion of new cigarette taxes would be deposited in the TSF beginning in FY 2008.

### **Finances**

Another key recommendation of the ACS report’s executive summary was to produce a comprehensive funding proposal, including budget justification, for trauma system development. The Department has obtained summary statewide cost data for trauma care from the Healthcare Association of Hawaii (HAH). The Director met with the Chief Executives and Chief Financial Officers of the major hospitals to ask them to quantify the uncompensated costs of hospital services and physician on-call costs for trauma care. The costs were reported as uncompensated facility costs, on-call physician costs and on-call costs for other workers necessary to provide trauma care (operating room nurses, imaging technicians, etc.). The cost estimates reported were:

Uncompensated Facility Costs	\$	11,470,665
On-Call Physician Costs		11,777,886
Other Workers On-Call Costs		<u>6,273,737</u>
<b>Total Un-reimbursed Costs</b>	<b>\$</b>	<b>29,522,288</b>

The Department has requested additional information on the methodology used to determine these costs and HAH is continuing to work to use their hospital database, held by Hawaii Health Information Corporation (HHIC), to refine and characterize these cost estimates.

## **TSP: Operational Components**

### **Injury Prevention And Control**

Injury prevention was assessed by the ACS in their report as representing one of the most mature aspects of Hawaii's current trauma system. The Injury Prevention and Control Program (IPCP) of the EMSIPSB, with the assistance of the Injury Prevention Advisory Committee and many committed stakeholders, continues to make progress on implementation of the Hawaii Injury Prevention Plan 2005-2010. In 2006, the Legislature passed several important initiatives that will strengthen the injury prevention component of the emerging trauma system. These include the passage of Act 105, SLH 2006 (establishing graduated licensing requirements for teenage drivers) and Act 175, SLH 2006 (establishing the requirement for age appropriate passenger restraints for children 4 to 8 years of age).

The ACS report noted on page 33:

“The fact that the Injury Prevention and Control Section has a documented track record of planning, implementation, evaluation and reporting of various injury prevention initiatives may position it well to expand its focus to the “control” mission of its title which involves treatment of injured patients through an effective and inclusive trauma care system.”

The ACS Executive Summary recommended that the Department:

“Expand the scope of the Injury Prevention and Control Section of the Emergency Medical Services and Injury Prevention System Branch to include the control attributes of tertiary injury prevention, specifically the development, implementation and ongoing improvement of an inclusive and integrated trauma care system.”

When the administrative needs of EMSIPSB are addressed, it is hoped that a new organizational structure will allow the Branch to build upon the expertise in the IPCP noted by the ACS consultants, and to apply that expertise more broadly to trauma system development.

## **Trauma Care Facilities And Trauma Center Designations**

All previous State and local statutes, rules and policies related to acute trauma services have been reviewed. It was found that in 1998, the EMSIPSB had issued the Hawaii Trauma System Trauma Triage Plan that designated levels of trauma hospitals throughout the State. This document provides guidelines for the best destination hospital for major trauma cases and various sub-categories of trauma including pediatric, pregnancy and burns (Appendix F). While this plan and its guidelines have never been rescinded, they do not reflect current hospital capabilities and will need to be revised.

The ACS report noted that "Hawaii has only one trauma center on Oahu and a disparate, inconsistent, patchwork of trauma services at other hospitals" and this remains the situation today. Through an on-site visit in 2004, The Queens Medical Center Trauma Service (QMC) was verified as a Level II Trauma Center by the ACS. (3) The major criteria that have precluded a Level I (higher level) designation for QMC involve lack of injury prevention activities and research in trauma care, areas that QMC is poised to develop through greater collaboration between DOH, the John A. Burns School of Medicine (JABSOM) of the University of Hawaii at Manoa and community agencies. With the exception of Straub Hospital's burn unit, no hospitals other than QMC claim to have any special expertise in trauma.

The EMSIPSB, in 2005, completed a survey of all facilities that receive 911 ambulance patients on Oahu to define their capabilities. This information is used in selecting the appropriate hospital for ambulance patients with various conditions. The results of the survey were reviewed by the AHTC and it was concluded that while the survey was not specifically directed to trauma care, another survey was not needed at this time. It was also noted by many on the AHTC that the self-described capabilities of some Oahu facilities did not support the observation that they tended to divert even moderate trauma cases to QMC. Since QMC already has the most ambulance arrivals of any Oahu hospital, sending all trauma patients there could compromise the hospital's ability to respond to the more severe cases. In recent months, QMC has requested re-routing of less severe trauma patients due to lack of beds available for patient admissions. In order to identify and understand the key determinants of "over-referral" to QMC, EMSIPSB is acquiring descriptive patient triage data for review.

The vulnerability posed by only one state trauma center was demonstrated by the earthquake of October 15, 2006. The loss of electrical power and lack of back-up generator capacity resulted in QMC requesting that patients with head trauma be taken to Tripler Army Medical Center until power was restored. While Tripler had a neurosurgeon on call and sufficient power for their CT scanner to function, the lack of a planned system to activate another trauma center led to confusion during the event. The HRSA guideline recommends that if time from the traumatic incident to arrival at the trauma center exceeds one hour, a closer designated trauma support hospital should be available to perform the initial evaluation and stabilization. This is in keeping with the ACS report recommendations to develop trauma capabilities on each of the major NIs. It



recommended that progressive levels of trauma care for the state be developed and designated through the clear administrative authority of the lead state agency (i.e. DOH).

The EMSIPSB has recognized that NI patients with serious trauma cannot reach the QMC trauma center within the “golden hour”, the first hour post-injury where life-threatening injuries must be stabilized and treated. The concept of “trauma support hospital” was used in the 1998 Hawaii Trauma System Trauma Triage Plan to describe other hospitals that patients would be able to reach within an hour. Yet the minimum capabilities of those facilities were not defined. The official designation of levels of trauma centers is important to raise the quality of services and is a key step in enhancing funding for the resources needed to provide each level of care.

EMSIPSB, with input from the AHTC, developed a NI trauma survey based on ACS recommendations and other national sources (3-6) for use in assessing current capabilities for the care of trauma patients at NI hospitals. Only the hospitals that normally receive patients by ambulance were included in this initial survey, although other facilities on the NI may occasionally receive trauma patients as well. A cover letter and the survey were sent to the Chief Executive Officer of each hospital with copies to the Chief of Medical Staff and the Medical Director of the Emergency Department for that facility. The letter explained the purpose of the survey and the intention to follow-up with a meeting to discuss it and matters pertinent to improvement of trauma services for the State. The EMSIPSB received excellent cooperation with the survey effort and the NI visits which occurred during September and October of 2006. The meetings for each facility were well attended by hospital administrators, nurses and physicians. This resulted in informative discussions that identified issues not apparent in the results of the written survey (Appendix G “Neighbor Island Hospital Surveys and Visits”).

The results of the written survey and hospital staff interviews support several general conclusions. All participating facilities have excellent emergency department physician coverage and can perform basic stabilization procedures, such as the placement of a chest tube and transfusion. They all are able to get timely initial diagnostic services for patients such as ultrasound, x-ray, lab and CT scans. All facilities are able to get diagnostic images interpreted 24 hours a day, but because they use different systems, they may not be able to share those images with consultants at other hospitals. The hospitals can provide an operating room and anesthesia coverage within the first hour of receiving a trauma patient if there is a surgeon available and willing to operate. General surgeons are available on call for most hospitals but have varying degrees of comfort in caring for trauma patients. In some communities the general surgeons caring for patients with trauma recommend transfer to Oahu because of the lack of orthopedic consultation, or inadequate inpatient support services in their facility.

Many NI informants cited the lack of surgical specialists such as neurosurgeons, orthopedic and plastic surgeons, and even the lack of primary care physicians as limiting factors in the care of trauma patients. An overall loss of physician services over recent years was cited by some communities. As noted in the ACS report, Maui is the only NI that has a neurosurgeon providing care to trauma patients. Various reasons for the lack of

on-call physicians to care for trauma patients were given, all of which were included in the Legislative Reference Bureau's report to last year's legislature on HCR 229. The NI hospital administrators have been working to improve the availability of physician services for some time, although often only with reference to their own institution, and community. They seem increasingly willing to work collaboratively to address the physician on-call issues through regional agreements.

One of the most serious issues limiting trauma care, particularly in Hawaii and Maui counties, is the lack of orthopedic surgeons who will care for trauma cases. The lack of orthopedic surgical services is not just for serious trauma, but even for the more routine orthopedic cases, such as hip fractures. It was reported that patients with serious trauma will be quickly accepted by QMC. However, for isolated orthopedic trauma it is very difficult to find an accepting Oahu hospital. The issue is also viewed as problematic by QMC, which reported that their orthopedic surgeons often feel they are the only ones on-call for the whole state. Interestingly, Kauai, with a smaller population base, rarely needs to transfer orthopedic cases off island. One factor to explain this difference is that the two hospitals on Kauai (KVMH and Wilcox) coordinate EMS calls with each other. They have developed a system to direct patient destination in order to maximize the coverage they are able to secure from their physicians.

One important issue that has emerged that has serious implications for trauma system development is the lack of acute care beds in most facilities. Informants say that long-term care/skilled nursing level patients occupy acute care hospital beds, and are wait-listed for the limited long-term care or community placements available. Because these long-term care patients cannot be discharged from the hospital, new acute care patients are often held for long periods of time in the emergency department. With insufficient beds to accommodate their own patients, hospitals have no incentive to sign transfer agreements that are essential to regionalization of trauma care and to an organized system in which patients are taken to the facility with the services that best suit their conditions.

### **Pre-Hospital And Inter-Facility Care**

Any state trauma system depends on a system of medical transport services that assures that patients reach the level of care they need within a time frame that does not compromise the outcome of their condition.

The initial response of the 911 system is one of the strongest components of the current continuum of services for trauma patients. All communities in Hawaii, including rural and NI, have advanced life support ambulances available with paramedics who are well-trained in the care and support of trauma patients until they reach capable emergency physicians. This level of 911 service placed Hawaii very high in this category in a recent "report card" on emergency services issued by the American College of Emergency Physicians. Unfortunately, the same report showed Hawaii ranking very low in access to trauma centers. (7)

Inter-facility ground transfers are usually performed by private ambulance services when available. Because of limits on the availability of units and staff for private ambulance services, 911 ambulances are sometimes needed to provide timely transfers for patients between facilities and/or to and from airports. Meetings are being held between EMSIPSB, private and public ambulance providers to improve system capacity for timely inter-facility transfers.

### **Air Medical Ambulance Transport Services**

The air medical services for the state that are important for trauma care include both rotor-wing/helicopter services and fixed wing air ambulances. Dependence on only one air ambulance provider and reports of long waits for transport to the trauma center were noted in the ACS report as serious concerns.

In April of 2006, a second fixed-wing air ambulance company, Air Med Hawaii, was granted an emergency Certificate of Need (CON) by the State Health Planning and Development Agency (SHPDA). With two air ambulance companies currently operating, air ambulance response times for trauma cases are greatly improved.

Subsequent to the granting of a CON to Air Med Hawaii, it was decided by the Attorney General of the State of Hawaii that a CON requirement from SHPDA for air ambulance licensure was in conflict with Federal law, and could no longer be required. This opens the market for other air ambulance providers, but to date, none have applied for a Hawaii license.

Helicopter air ambulances are also used to transport trauma victims, sometimes from the scene of the trauma to a hospital, and also between hospitals. Helicopters can land on the roof of QMC to bring patients to the trauma center. Flight restrictions due to darkness, terrain, weather and equipment factors limit helicopter availability to transport trauma victims expeditiously.

Maui County's air ambulance helicopter can respond to any island in the county, and is the only air ambulance helicopter currently flying patients between islands. This has improved options for rural communities in Maui County, especially Hana, Lanai and Molokai whose patients can be flown to Maui or Oahu. The use of the 911 helicopter for urgent transfers to and from Maui Memorial Medical Center (MMMC) has added to system capacity. At the present time, Hawaii County and Oahu have limited rotor-wing air ambulance services that can pick up patients near the scene of injury. Kauai does not have rotor-wing air ambulance services but an interest in this was expressed during recent NI meetings with hospital administrators and medical staff.

A key recommendation of the ACS Executive Summary was to "develop contingency plans for the anticipated elimination of the MAST program." Indeed the Military Assistance to Safety and Traffic (MAST) program that provided free Medevac helicopter service on Oahu ended in April of 2006. The Hawaii Air National Guard has been

providing service in place of MAST under a temporary agreement. The Department will continue to work with the military and county officials to determine future options.

### **Disaster Response**

A strong trauma system is a vital component of an integrated effective response to disasters. During the past year several exercises carried out jointly by multiple agencies addressed the threat of hurricanes, an improvised nuclear device at Honolulu Harbor, and an avian flu outbreak. These exercises afforded government and community agencies the opportunity to continue to develop plans and to practice procedures for disaster response. The Department is working with the HAH, Civil Defense at the state and county levels, and other public and private agencies to coordinate all health related disaster activities.

Several events of the past year, while not disasters, have challenged the health care delivery system and demonstrated vulnerabilities. In March of 2006 there were no commercial options for patients needing fixed-wing air ambulance services for approximately three weeks when the only fixed-wing air ambulance carrier was not operating its airplanes. Fortunately, during this period the U.S. Coast Guard assisted with the transport of many patients from the NI, coordinated by the Department with volunteer medical crews from the Disaster Medical Assistance Team (DMAT).

The recent experience with the Big Island earthquake further tested the disaster response system. This event pointed to the importance of regional collaboration as a consequence of the partial closure of Kona Community Hospital and the need to transfer patients to Hilo Medical Center. It also highlighted the vulnerability, as noted by the ACS, of having only one trauma center located on Oahu. The loss of electrical power was most severe on Oahu where the lack of back-up generator capacity resulted in QMC requesting patients with head trauma to be taken to Tripler Army Medical Center until power was restored. While Tripler had a neurosurgeon on call and sufficient power for their CT scanner to function, the lack of a planned process to activate another trauma center led to confusion during the event. The ACS recommended inter-facility agreements and back-up plans for patient care when QMC is not able to operate at full capacity are still needed.

### **Human Resources**

A complete assessment of the number of professionals, including physicians of certain specialties, nurses and ancillary health care providers needed for an effective trauma system, has not yet been conducted. But the shortage of physicians willing to be on-call to provide trauma care is an important concern for which solutions are currently being sought. The ACS report recommends that the state "create incentives and develop practice models to facilitate trauma-related physician recruitment and retention." The NI surveys described in this report revealed that a variety of strategies consistent with the ACS recommendation are being employed, but their success has not been evaluated.

The issue of physician recruitment and retention is also being addressed in part by S.C.R. 150 that calls for a Task Force to Study the Physician On-Call Crisis, chaired by the Insurance Commissioner; the task force will report their findings to the 2007 Legislature.

The chronic shortage of paramedics is an issue remarked upon in the ACS report in one of their key recommendations "Improve access to enrollment for paramedic education programs." Act 266 of the 2006 Legislature provided \$300,000 for training stipends for emergency medical technician students who would not otherwise have access to a training stipend program.

### **Trauma Education**

A variety of educational activities are conducted for primary prevention of injuries by the IPCP and its partners. Educational activities for optimal care of the trauma patient continue to be provided by QMC through Advanced Trauma Life Support classes and the annual Trauma Symposium, last held July 21-22, 2006. Educational classes on pediatric trauma and burn care were conducted on the NI, and a course in management of radiation exposure was conducted on Oahu with NI attendees supported by the HRSA Hospital Preparedness Grant. Pre-hospital Trauma Life Support classes are required for paramedics statewide. Nurses have a trauma course that is intermittently available but is currently required only by QMC.

### **Information Systems**

In order to develop the TSP, more information is needed about trauma care currently being provided in hospitals across the state. The EMSIPSB has not been able to maintain a trauma registry although authority to collect trauma data from hospitals is established in statute by HRS section 321-230. At the present time only QMC maintains trauma registry data although most of the hospital data needed for a trauma registry is already provided by other hospitals to HHIC. EMSIPSB will be working with the hospitals and HHIC so that all facilities participate in trauma data collection and a complete statewide trauma registry is established. Analysis of data collected will establish the patterns and clinical outcomes of current services, and be used to plan for improvements and financing of a trauma system.

A project that will add considerably to the data available to understand trauma care and respond to disasters is the Hawaii Emergency Medical Services Information System (HEMSIS). This project, funded by federal emergency preparedness funds, uses a program that captures patient care data entered via laptop computer by paramedics in the field. This creates an electronic patient care record that is then sent to a web-based data repository system. Hospitals receiving ambulance patients can down-load the report for individual patients arriving in their emergency department.

Cumulative pre-hospital data is held in HEMSIS and can be analyzed and reported at many levels. All EMS providers are scheduled to be using the HEMSIS system by the

end of 2006. Hawaii will have the country's first statewide data base with input from all EMS providers using uniform system standards and variables. The ready availability of "real-time" data on pre-hospital trauma cases statewide will be extremely useful in developing the TSP and will provide new opportunities for system improvement and research.

## **Summary**

In the coming year, the Department will continue the assessment and planning process it has begun in order to assure that the comprehensive statewide trauma system envisioned is based on a "public health approach". This approach views injury as the culmination of foreseeable and preventable antecedents and determinants, not merely as isolated and inevitable "accidents". It also includes plans for assuring rapid progression to rehabilitation for those who do sustain injury. It is anticipated that the conceptual framework for the Hawaii State Trauma System will be fashioned within the next twelve months. The Department will then spearhead its implementation, which will build Neighbor Island trauma care capacity, assure timely air and land medical transport, and fortify existing tertiary medical care.

This comprehensive effort can only be accomplished with the assistance of the AHTC, and with continued collaboration with Neighbor Island partners, for whom the rate of death due to injury is twice that of Oahu residents. It will also depend upon the continued commitment of sufficient financial and human resources, not only at its inception, but also for the foreseeable future. Yet, despite the challenges posed by the complexity and scope of the task at hand, the demonstrated commitment of key stakeholders will serve to produce measurable improvement through consultation, collaboration, and collective action.

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Ten leading causes of death among Hawaii residents, by age group, 2000-2004<sup>1</sup>

	<1 year	1-14 years	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65+ years	All ages
1	Perinatal conditions 315	Unintentional injuries 149	Unintentional injuries 236	Unintentional injuries 163	Malignant neoplasm 292	Malignant neoplasm 951	Malignant neoplasm 1,649	Heart disease 9,581	Heart disease 11,927
2	Congenital anomalies 85	Malignant neoplasm 28	Suicide 77	Suicide 110	Heart disease 264	Heart disease 753	Heart disease 1,200	Malignant neoplasm 6,926	Malignant neoplasm 9,970
3	SIDS <sup>2</sup> 40	Congenital anomalies 16	Malignant neoplasm 30	Malignant neoplasm 94	Unintentional injuries 249	Unintentional injuries 269	CVD <sup>3</sup> 236	CVD 3,256	CVD 3,742
4	Unintentional injuries 25	Homicide 11	Heart disease 28	Heart disease 75	Suicide 123	CVD 156	Unintentional injuries 167	Chronic lower resp. diseases 1,191	Unintentional injuries 1,357
5	Heart disease 19	Suicide 8	Homicide 12	Homicide 23	CVD 76	Suicide 140	Diabetes mellitus 167	Influenza and pneumonia 1,021	Chronic lower resp. diseases 1,398
6	Influenza and pneumonia 11	Heart disease 7	Injuries of unk. intent 12	Injuries of unk. intent 14	Homicide 46	Liver disease and cirrhosis 109	Chronic lower resp. diseases 131	Diabetes mellitus 700	Influenza and pneumonia 1,133
7	Septicemia 9	Septicemia 6	Congenital anomalies 10	CVD 11	Injuries of unk. intent 38	Injuries of unk. intent 69	Septicemia 95	Unintentional injuries 699	Diabetes mellitus 962
8	Homicide 8	Influenza and pneumonia 6	Septicemia 4	Diabetes mellitus 11	Liver disease and cirrhosis 26	Diabetes mellitus 67	Liver disease and cirrhosis 81	Alzheimer's disease 696	Septicemia 773
9	Injuries of unk. intent 8	Injuries of unk. intent 4	Other circ. diseases 3	Other resp. diseases 6	Other circ. diseases 18	Septicemia 61	Nephritis, nephrotic synd. 77	Septicemia 575	Alzheimer's disease 706
10	Other resp. diseases 7	Perinatal conditions 3	Chronic lower resp. diseases 3	Other circ. diseases 6	Septicemia 17	Chronic lower resp. diseases 51	Suicide 70	Other resp. diseases 538	Nephritis, nephrotic synd. 651

<sup>1</sup>Deaths grouped as recommended by National Center for Health Statistics ([http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53\\_15.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_15.pdf)).<sup>2</sup>Sudden Infant Death Syndrome.<sup>3</sup>Cardiovascular Disease.



EMERGENCY MEDICAL SERVICES ADVISORY COMMITTEE

Aquino, Marciano	Consumer Oahu
Irons, Diane	Consumer - Lanai
May, David	Allied Health - Maui
McKnight, Ryan	Mobile Intensive Care Technician - Kauai
Moore, David	Emergency Room Physician - Kauai
Papayoanou, James	Allied Health - Oahu
Rosario, Darren	Mobile Intensive Care Technician - Hawaii
Santee, Ian	Mobile Intensive Care Technician - Oahu
Schaal, Daniel	Allied Health - Kauai
Schwartz, Andrew	Emergency Room Physician - Oahu
Thomas, Craig	Emergency Room Physician - Oahu
Tuohy, Shauna	Consumer - Hawaii
Watkins, William	Mobile Intensive Care Technician - Maui
Wellington, Millicent	Consumer - Kauai

Ex-Officio:

Maj. Gen. Robert G.F. Lee	Department of Defense
Rodney K. Haraga	Department of Transportation
David T. Sakamoto, MD	State Health Planning and Development Agency

Meetings held on January 25, April 19, July 19, and October 18, 2006.

Emergency Medical Services Advisory Committee  
Other Attendees

AGSALOG, Danny  
ALEJANDRO, Dale  
ALLISON, Jerry  
ANCHETA, Andy  
APTER, Sandy  
BAILEY, Speedy  
BENTZIEN, Vicki  
BRUMBLAY, Bob  
BURSEY, Paul  
CHAN, Clay  
CHAR, Libby  
CHING, Jeff  
CLAIRMONT, Toby  
COLLINS, Paul  
COOK, Dolores  
CROFT, Brian  
CUDIAMAT, Cheryl  
DURBIN, Marsha  
DUKES, Patty  
FANCHER, Donald  
FARNSWORTH, Alexandra  
GARRIGAN, Paul  
GATES, Donnie  
GONG, Jenny  
GORMAN, Genine  
GREENWOOD, Jane  
GRIEP, Charles  
HANAGAMI, Jason  
HASHIMOTO, Ron  
HO, Hao Chih  
HOBBS, Steve  
HUNT, Jim  
INOUYE, Les  
IRELAND, Jim  
JONES, Sally  
JONES, Terrence  
KELLY, Melanie  
KALINOWSKI, Ed

KLUGER, Andy  
KRUSE, Wayne  
LERNER, Stuart  
LEWIS, Joe  
LUCAS-LEGG, Anita  
MAELE, Dennis  
MASUNAGA, Geri  
MOLINA, Boogie  
MORIMOTO, Curt  
MOSHER, Dale  
MOSSMAN, Frances  
NAKANO, Dean  
NELSON, Dave  
NGUYEN, Think  
OCTAVIO, Zach  
ONGEMACH, Jeff  
ORR, Susan  
PAIVA, Scotty  
PARKER, Justin  
PEDRO, Robert  
PUNG, Karlson  
RIGSBEE, Cliff  
ROSE, Chris  
ROSEN, Linda  
SCAMAHORN, Jim  
SCHAEFER, Scotty  
STEVENS, Mike  
TAKEHARA, Dave  
TASH, Eric  
VEATCH, Tom  
WHITE, Brad  
YAMADA, Ron  
YAMAMOTO, Kelly  
YAMAMOTO, Mike  
YOUNG, Lynette  
YURONG, Dennis  
YURONG, Helen  
ZARYSKE, Greg

Emergency Medical Services  
Ad Hoc Trauma Committee Attendees and Meetings

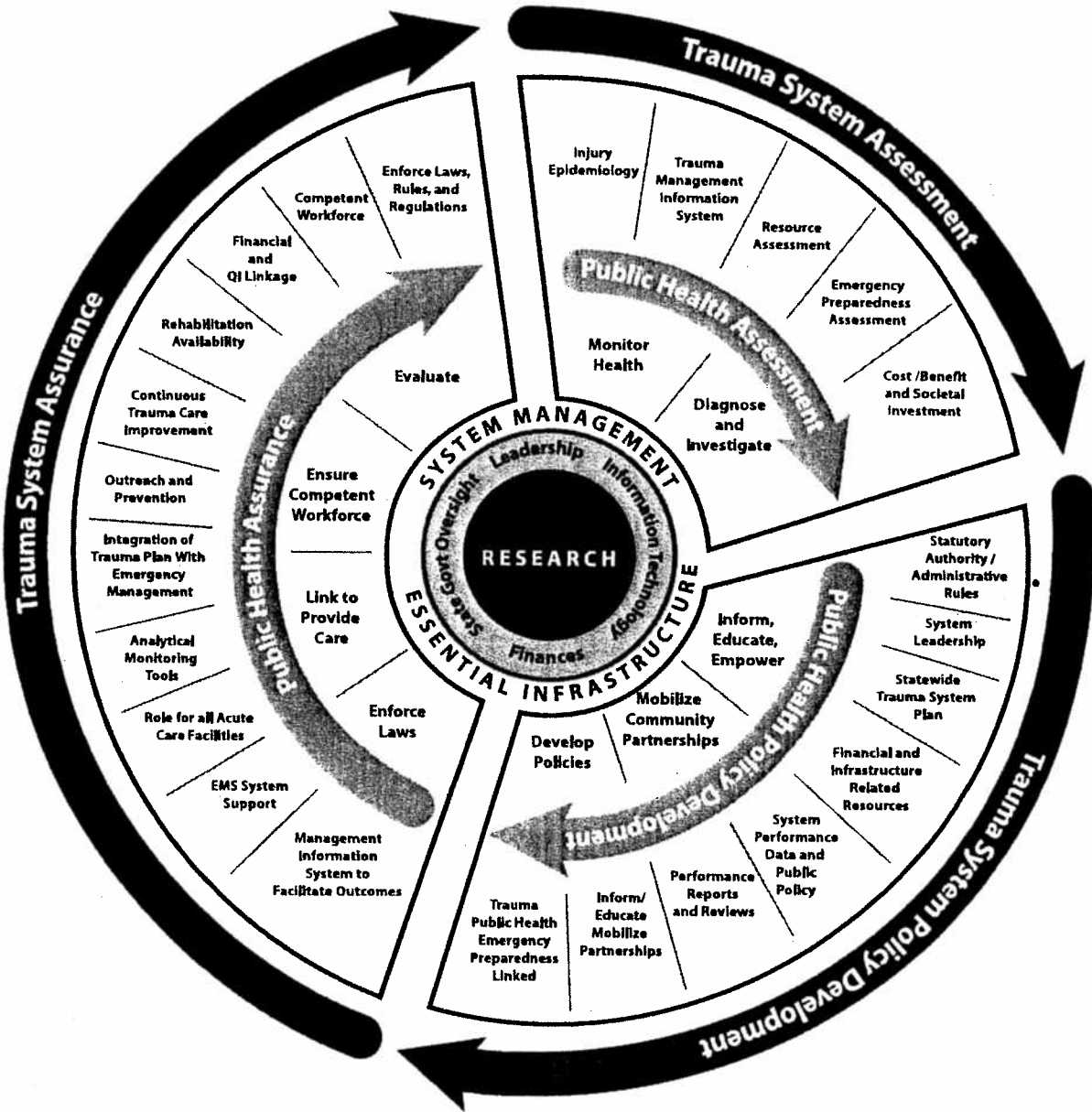
ALLISON, Jerry	Emergency Physician
BAILEY, Speedy	Vice President, American Medical Response
BENTZIEN, Vicki	Assistant Chief-Quality Assurance, Emergency Medical Services Division, City and County of Honolulu
BRUMBLAY, Robert	Medical Director, Oahu, State Emergency Medical Services and Injury Prevention System Branch
CHAR, Elizabeth	Director, Department of Emergency Services, City and County of Honolulu
COLLINS, Paul	Program Specialist, State Emergency Medical Services and Injury Prevention System Branch
DURBIN, Marsha	Director, Trauma Services, The Queen's Medical Center
DUKES, Patricia	Chief, Emergency Medical Services Division, City and County of Honolulu
FARNSWORTH, Alexandra	Chief Flight Nurse, Air Med Hawaii
FRIEL, Aaron	Chief Flight Nurse, Hawaii Air Ambulance
GATES, Donald	Assistant Chief-Operations, Emergency Medical Services Division, City and County of Honolulu
GORMAN, Genine	Manager, Emergency Department, The Queen's Medical Center
HO, Hao Chih	Medical Director, Trauma Services, The Queen's Medical Center
JONES, Sally	Trauma Coordinator, Trauma Services, The Queen's Medical Center
JONES, Terrence	Medical Director, Hawaii County, State Emergency Medical Services and Injury Prevention System Branch
KELLY, Melanie	Director, Emergency Department, St. Francis Medical Center-West
KALINOWSKI, Edward	Department Chair, Emergency Medical Services Training, Kapiolani Community College
KAWAKAMI, Jeanette	Hawaii Air Ambulance
LEWIS, Joseph	Medical Director, Emergency Medical Services Division, City and County of Honolulu
MOLINA, Boogie	Air Med Hawaii
MOORE, David*	Medical Director, American Medical Response
NELSON, David	Medical Director, Maui County, State Emergency Medical Services and Injury Prevention System Branch
ORR, Susan	Senior Clinical Consultant, Emergency Management Healthcare Association of Hawaii

PAIVA, Scotty	Emergency Medical Services Division, Hawaii County Fire Department (Retired)
ROSEN, Linda	Chief, State Emergency Medical Services and Injury Prevention System Branch
SCAMAHORN, James	Medical Director, Kauai County, State Emergency Medical Services and Injury Prevention System Branch
SCHAEFER, Scotty	Maui Emergency Medical Services Advisory Committee, Paramedic, American Medical Response
SCHWARTZ, Andrew*	Medical Director, Emergency Medicine, The Queen's Medical Center
VEATCH, Thomas	Paramedic, Kauai, American Medical Response
WATKINS, William*	Paramedic, Maui American Medical Response
YEW, David	Medical Director, Air Med Hawaii
YAMAMOTO, Michael	Administrative Officer, Disaster Medical Assistance Team, Healthcare Association of Hawaii
YOUNG, Lynette	Medical Director, Pediatrics, State Emergency Medical Services and Injury Prevention System Branch
ZARYSKE, Greg	Emergency Operations Manager, The Queen's Medical Center

\*Emergency Medical Services Advisory Committee member

Ad Hoc Committee meetings held on April 19, June 15, July 19, October 18, and November 29, 2006.

Model Trauma System Planning and Evaluation  
 (Reference 1, Figure 4)  
 Core Functions, Essential Services, and Trauma System Benchmarks



# **Executive Summary ACS COT Trauma System Consultation State of Hawaii**

## **Emergency Medical Services & Injury Prevention System Branch**

### **State of Hawaii Department of Health**

#### Methodology

The Office of Emergency Medical Services & Injury Prevention System Branch (EMSIPCS Branch) for the State of Hawaii requested this trauma system consultation, which was conducted under the auspices of the American College of Surgeons, Trauma System Consultation program (TSC). The multi-disciplinary Site Visit Team (SVT) consisted of: three trauma/general surgeons, one neurosurgeon, one emergency physician, a former State EMS director, and a rural trauma & prehospital specialist. Biographical sketches for team members are included as Appendix A of this report.

Prior to the visit, the SVT reviewed the ACS Pre-Review Questionnaire (PRQ) completed by the office of EMS. The format of this report correlates with the components outlined in the ACS *Trauma Systems Consultation* document. The SVT also reviewed a number of related supporting documents provided by the EMS office.

The SVT convened in Honolulu Hawaii on October 23, 2005, to review the state of Hawaii Trauma System. In addition to the island of Oahu, the SVT spent one day each on the islands of Maui and the Big Island of Hawaii. The meetings during the five-day visit consisted mostly of plenary sessions during which the SVT engaged in interactive dialogue with a broad range of representative trauma system participants. There was also an opportunity for informal discussion with the participants, and time devoted to questions and answers. The SVT was unable to travel to Kauai, but met as a small group with trauma system participants from that island.

On October 28<sup>th</sup>, a final plenary session was held with system stakeholders invited by the lead agency during which a summary statement of principal findings by the SVT was presented. At this session, the elements and structure of an “inclusive trauma care system” were outlined, as well as the magnitude of the injury problem in the state of Hawaii. The major strengths, challenges, opportunities, and key recommendations made by the SVT were reviewed. A list of

participants that were involved in the discussions and deliberations is included as Appendix B of this report.

During the survey, the SVT met in sequestered sessions for more detailed reviews and discussion, and for the purpose of developing a team consensus on the various issues and recommendations involved in the survey. During the last two days of the visit, SVT wrote and revised a report of their findings and recommendations regarding the trauma system in the State of Hawaii. This report was based on the information contained in the PRQ, information obtained during the interactive dialogue, and information obtained in the course of informal interviews during the site visit. The factual information contained in this report has been thoroughly reviewed and corrected to the extent possible. Occasional minor inconsistencies related to the communication and transcription of information passed on to the surveyors during the interactive sessions will not affect the assessment and key recommendations made in the report.

The process by which this report was developed was independent of any other trauma system consultations or assessments. The State of Hawaii EMS/PCS Branch staff were given the opportunity to review this report for factual content, and the report has been subsequently reviewed, revised and edited by members of the ACS Trauma Systems Planning & Evaluation Committee.

## Overview

The primary objective of this ACS trauma systems consultation is to guide and help promote a sustainable effort in the graduated development of an inclusive system of trauma care for the state of Hawaii. Hawaii is the 42nd most populous state in the country with a population of approximately 1.26 million spread over a total area of roughly 6,423 square miles, disbursed over a 1,523-mile range. This population density gives Hawaii the 13<sup>th</sup> highest population density in the U.S. The islands are geographically isolated, with the main population mass approximately 2,400 miles distant from the nearest major US city. This extreme isolation and limited re-supply capability renders Hawaii uniquely vulnerable to natural disasters that may occur in a mid-pacific environment.

County	Population increase
Honolulu	17.9 %
Kauai	58.5 %
Hawaii	77.0 %
Maui	95.1 %

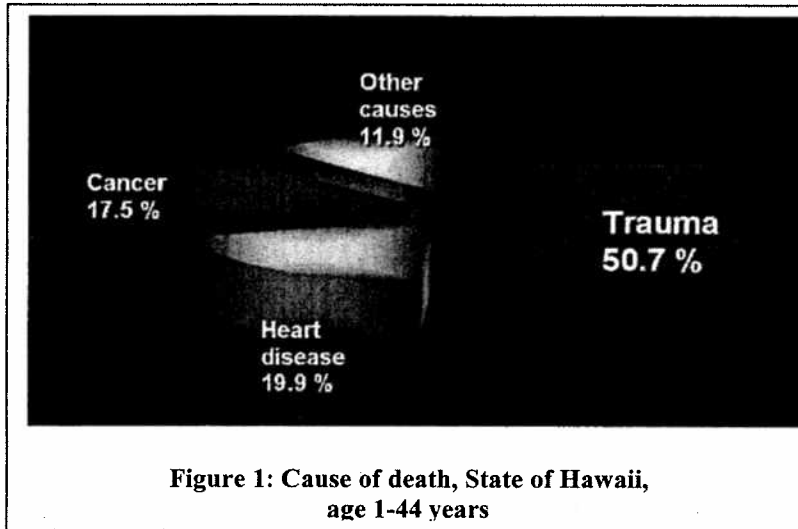
Table 1: Population growth, by county,  
1990 – 2004

Reference: U.S. Census

Hawaii has experienced a cumulative population growth rate of 4.2% since 2000, roughly matching that of the continental United States. The population growth within the islands has been disproportionate, with the highest growth rates seen on the neighbor islands (Table 1). These islands have also seen substantial growth in up-market real estate in the form of hotels/resorts, condominiums, and second/retirement homes. With this increased growth has, or will likely come, the expectations of enhanced public services, including trauma and emergency care, commensurate with the level

and sophistication of these residential and resort developments.

Injury in the state of Hawaii accounts for 50.7% of deaths for persons with ages from 1-44, roughly one third more than that of cancer and heart disease combined (Figure 1). Data provided through the State Injury Prevention & Control Section indicates that motor vehicle traffic crashes were the predominant cause of unintentional death. The rates of unintentional injury on the neighbor islands were more than double those for Honolulu County across most age categories based on a report of fatal injuries in the state from 1996-2000. While possibly a



function of several factors, this large disparity in the mortality rate from trauma suggests an association between delayed access to organized, definitive trauma care and risk of death in areas outside Oahu. These data underscore the seriousness of traumatic injury as a public health problem in the state. They also provide a strong argument for a concerted public health effort to continue the development of an inclusive trauma system that will serve the needs of residents and visitors to

the state, particularly on the islands of Maui, Hawaii, and Kauai.

## Current Status

Past efforts toward trauma systems development include a National Highway Traffic Safety Administration (NHTSA) assessment in 1991 which recommended:

- Amend current EMS legislation to include the following:
  - Trauma care system – authority for designation, mandatory trauma registry participation by all acute care hospitals caring for the injured, and triage protocols;
  - Certification of First Responders;
  - Formal recognition of County EMS Councils and delineation of roles and responsibilities (e.g. planning, coordination, and evaluation to address local needs); and
  - Liability protection – revise, if necessary, to address concerns.
  
- Amend current Administrative Rules regarding ambulance service licensure enforcement to provide specific authority for immediate on-site citation and/or temporary suspension in significant cases of failure to comply with requirements when non-compliance could result in compromise of patient care.



- In the course of developing and approving the state EMS strategic plan, review for compliance with functions outlined in Hawaii Revised Statute, seek early input from County EMS Councils, review EMS Branch staffing and Advisory Committee standing committee structure with the aim of supporting goals and objectives of the plan.
- Allocate sufficient resources to the State EMS Advisory Committee to enable them to travel to other islands as needed.
- Provide funding to support county EMS infrastructures (e.g. Council staffing, coordination).

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 was developed in 1993 through the EMSIPCS Branch, but was limited to guidelines for prehospital trauma triage. Inter-island transportation, a significant and unique challenge in Hawaii, was addressed in a 1999 report to the 20<sup>th</sup> state Legislature which included a “Hawaii Aeromedical System Strategic Plan”. In 2001, when the federal Trauma/EMS (Title XII) program was re-funded, the state of Hawaii initiatives included an update of the State trauma plan, the completion of a SWOT (strengths, weaknesses, opportunities, threats) analysis, and a disaster preparedness survey. In 2002, a federal Trauma/EMS grant was awarded for further development of the trauma care system plan, the establishment of a statewide trauma registry, and the establishment of a statewide stakeholder’s committee to oversee system development.

Further planning for a trauma system occurred circa 2003 based on the SWOT analysis completed the year before, and included the identification of five essential elements for a statewide system and four principal goals: establishment of a trauma advisory council, the development of a trauma care system plan, the establishment of a statewide trauma registry, and the development of sustained funding for trauma systems development. A trauma stakeholders group was formed in 2003 and efforts made to begin the development of a more comprehensive system of trauma care for the state, outlined in a document titled “A Trauma System for Hawaii”. The activities of this group have not been sustained, and limited progress has been made on a trauma system plan or system-wide trauma registry.

Progress in trauma system development in Hawaii has been slow and inconsistent. Factors contributing to this include intermittent federal funding, limited state and municipal funding, the lack of sustained physician leadership, limited participation in trauma system development by physicians, institutions and municipal agencies at the island/regional level, and the lack of a centralized and appropriately staffed trauma system oversight structure with the authority to implement system improvements. In addition, the existence of a more centralized population well served by the single designated trauma center has resulted in little impetus for change.

The environment itself has now changed, and there is now additional federal funding available, including that related to the enhancement of disaster preparedness (bioterrorism funding), which has served to stimulate renewed interest in further trauma system development. In addition, there appears to be increased recognition that with the decentralized population growth in Hawaii there is a greater need to enhance the essential public services, including the provision of organized trauma care, in more remote areas. The decision to seek an American College of Surgeons, Trauma System Consultation is an important step, and is felt to be confirmation of the commitment to create an inclusive trauma care system for the state of Hawaii. The ACS site visit team acknowledges this commitment, and wishes to commend the Department of Health (DOH) and encourage them in their efforts to achieve this goal.

The current trauma system in Hawaii exists mostly as independently operating components and revolves around a single large Level II designated center, Queen's Medical Center, in Honolulu. Currently verified by the American College of Surgeons, Committee on Trauma as a Level II Trauma Center, Queen's Medical Center provides care for the vast majority of trauma on Oahu, pediatric and adult, as well as more serious trauma transferred in from the neighbor islands. There are no designated trauma centers on any of the neighbor islands, and only a single practicing neurosurgeon on Maui other than those on Oahu. The rapid transport of more severely injured patients to Queen's Medical Center is often problematic due to limited air medical transportation resources relative to the increasing demands on the transportation system. Physician availability for the care of trauma patients is lacking or inconsistent in some areas in the state and for some specialties (e.g. orthopedics, neurosurgery), increasing the demand for inter-facility transfer, and potentially placing additional burdens on the trauma center at Queen's Medical Center.

In terms of providing oversight and guidance to the Hawaii trauma system, Queen's Medical Center has a functioning trauma performance improvement (PI) program for its acute care facility, and the Hawaii EMSIPCS Branch has a well defined quality management plan, but the integration of these activities into a system-wide process for the review and improvement of trauma care is limited. There is currently no formal state Trauma Advisory Committee or other group charged with the responsibility for trauma system-wide performance improvement or system development.

There is an excellent statewide injury prevention program, but the integration of this program with the injury control initiatives involving the other components of the trauma system is not well developed. At the time of the system survey, there were vacancies in two key positions: the Queen's trauma medical director position and the state EMSIPCS director. There is currently no position or specific responsibilities for a system-wide trauma program manager.

The American College of Surgeons, through the Committee on Trauma, shares Hawaii's goal of promoting the delivery of optimal trauma care through the development of an inclusive trauma system. The primary objective of this trauma system survey is to work collaboratively with trauma system stakeholders to identify opportunities and actions that will help accomplish this goal. The following report is designed as an instrument to help identify and facilitate trauma system improvements.

## ACS TRAUMA SYSTEM CONSULTATION: SUMMARY

### Resources, Advantages & Assets

- Excellent injury prevention, across all age groups
- Mature, statutorily enabled and funded state EMS system
- Committed, high volume ACS-verified Level II trauma center in Honolulu
- Growth, development, & individual provider commitment in some areas
- Expanding tax base with real estate development & growth and the potential to help fund trauma system improvements at the state or municipal level
- Centralized billing model for ground ambulance services
- Electronic prehospital data collection

### Challenges

- Extreme geographic isolation with limited access and re-supply capacity
- Geographic and operational barriers to intra-system transport and transfer
- Lack of sustained staffing & leadership (medical & administrative) to sustain trauma system development
- Variable physician commitment, recruitment, and retention for the provision of trauma care
- “Compartmentalization” of functions of system (common to most systems)
- Lack of strong linkage between clinical and administrative components of system
- Limited public and legislative appreciation of the essential public service aspect of trauma care and recognition of trauma as a public health priority

### Current Opportunities

- Challenges that have stretched the capacity of Hawaii’s only verified trauma center have created legislative interest in the trauma system.
- The recent retirement of leadership at the EMSIPCS Branch creates an opportunity to tailor the job description and requirements for that position to include leadership in trauma system development.
- The current economic status of Hawaii’s State Government creates an opportunity to support the implementation of a comprehensive, inclusive, statewide trauma system plan.
- The state of Hawaii has a very strong emergency management / civil defense program throughout the state that could, potentially, provide resources to the trauma system development activities.

## **Key Recommendations:**

The following are the key recommendations from each component of the trauma system. This is a summary only, and does not include all the recommendations or explanatory language which may be found in the body of the report.

## **Administrative**

- ❑ Assess the needs and organization of the state EMS/PCS Branch to assure that the office has the staff and resources to meet the expectations and requirements defined in the statute and plans, including a position with specific responsibilities for the development of a comprehensive statewide trauma system.
- ❑ Formalize the trauma stakeholders group making it the State Trauma Advisory Committee (STAC) and link it with the state EMS Advisory Committee.
- ❑ Conduct a "Development of a Trauma System" Course (DOTS) for key leaders and trauma advisory stakeholders to establish a common vision and strategic goals. Use this to facilitate the development of the comprehensive trauma system plan.
- ❑ Create a comprehensive and inclusive Hawaii Trauma System Plan.
- ❑ Establish County Trauma Audit Committees (CTACs) for the counties of Hawaii, Maui, Honolulu, and Kauai that meets at least quarterly to address system issues and to coordinate trauma system improvement.
- ❑ Produce a comprehensive funding proposal, including budget justification, for trauma system development.
- ❑ Include county authorities in trauma system planning to explore partnership with the state lead agency for planning and policy development.
- ❑ Explore opportunities for additional trauma system funding by examining funding practices in other states/regions.
- ❑ Update the EMS statute and regulations to include clear language regarding trauma system development, administration and representation on the State EMS Advisory Committee, and to establish County Trauma Audit Committees (CTAC).
- ❑ Ensure that existing statutes/regulations and policies for hospital licensure, rehabilitation services, and other health care systems support trauma system development.

## **Human Resources**

- ❑ Perform a needs assessment and implement strategic planning for trauma-related human resources.
- ❑ Improve access to enrollment for paramedic education programs.
- ❑ Develop mechanisms or programs to improve nurse and allied health personnel recruitment & retention.
- ❑ Create incentives and develop practice models to facilitate trauma-related physician recruitment and retention.

## **Definitive care, interfacility transfer**

- ❑ Upgrade, verify, and designate Queen's Medical Center as a Level I Trauma Center.
- ❑ Organize the trauma resources in the State into an Inclusive Trauma Care System.
- ❑ Develop a backup trauma care capacity plan for Oahu.
- ❑ Resolve deficiencies in pediatric trauma care.
- ❑ Develop Maui Memorial Medical Center as a designated and verified as a Level III trauma center initially with a plan to evolve to a Level II facility within the next 5-10 years.
- ❑ Verify and designate at least one Level III trauma center(s) on the Big Island.
- ❑ Resolve the lack of neurosurgery coverage across the islands.
- ❑ Designate a trauma center on Kauai.
- ❑ Develop formal, codified transfer guidelines and agreements.
- ❑ Develop contingency plans for the anticipated elimination of MAST program.
- ❑ Analyze and improve current air medical transport system.

## **Injury prevention & control**

- ❑ Expand the scope of the Injury Prevention and Control Section of the Emergency Medical Services and Injury Prevention System Branch to include the "control" attributes

of tertiary injury prevention, specifically the development, implementation and ongoing improvement of an inclusive and integrated trauma care system.

### **EMS management, prehospital transport, communications**

- ❑ Recruit and employ the new state EMS Director as soon as possible. Charge that individual to aggressively pursue trauma system development goals.
- ❑ Provide for prehospital peer review protection from discovery for quality improvement activities through appropriate mechanisms within the state (e.g. legislation or rules/regulations).
- ❑ Enhance air medical transport resources throughout the state.
- ❑ Establish interoperable communications mechanism in all areas of the state allowing for routine and disaster related communications among all EMS agencies, other public safety agencies, hospitals, and emergency management (civil defense).

### **Disaster preparedness**

- ❑ Continue the strong interface and cooperative interaction with civil defense / emergency management utilizing an all hazards approach for addressing the public health and health care needs for response to man-made and natural disasters.
- ❑ Continue planning activities with the CDC and HRSA Domestic preparedness programs.

### **Information systems**

- ❑ Establish a formal statewide trauma registry incorporating all hospitals in the state.
- ❑ Ensure timely implementation of EMS electronic data collection throughout the state.

### **System Evaluation**

- ❑ Appoint & convene a State Trauma Advisory Committee (STAC), under the aegis of the EMS & Injury Prevention System Branch, whose charge includes the development a comprehensive, system-wide trauma performance improvement (PI) plan.

- Develop a system-wide plan for trauma performance improvement (PI) plan, including indicators relevant to the specific problems faced by the state of Hawaii (e.g. time-to-definitive care), and a process whereby ongoing trauma PI system monitoring can occur.

### **Research**

- Develop a working relationship between trauma clinicians, the EMSIPCS Branch and the University of Hawaii, to enhance trauma system research efforts.

LINDA LINGLE  
GOVERNOR OF HAWAII



Appendix E

CHIYOME L. FUKINO, M.D.  
DIRECTOR OF HEALTH

**STATE OF HAWAII**  
**DEPARTMENT OF HEALTH**  
**EMERGENCY MEDICAL SERVICES AND INJURY PREVENTION SYSTEM**  
3627 KILAUEA AVENUE, ROOM 102  
HONOLULU, HI 96816-2317  
PHONE: (808) 733-9210  
FAX: (808) 733-8332

In reply, please refer to:  
File:  
EMS 06-223

October 4, 2006

Nancy W. Lundblad, M.D.  
Medical Director  
Hilo Medical Center  
1190 Waianuenu Avenue  
Hilo, Hawaii 96720

Dear Dr. Lundblad:

Thank you for the kind attention you and the Hilo Medical Center staff paid to us during our visit to Hilo September 19, 2006. It is very apparent that you take great pride in the services you provide for East Hawaii, and with good reason.

I'd like to take this opportunity to respond to the list of questions and comments regarding the ACS report you shared with me during our visit. Let me reassure you that there are several areas where the team may not have gotten the facts exactly correct, but I do not think these errors influence the basic recommendations that resulted from the visit.

1. Your first request relates to providing copies of various documents reviewed by the ACS team. I cannot readily find that collection of documents at this time in my office. Copies probably exist and will surface when I have time to sort through all the boxes my predecessor left behind. What is your need related to those documents? In general, I think you would find that the same issues we identify today as problematic surface in previous assessments, but they are anecdotal without specific data being analyzed.
2. Page 16. **Hawaii Island EMS does have representation from hospitals.** I think the reference to the island of Hawaii's EMS system on this page is referring to the activity of advisory committees and they were not aware of any EMS Advisory Committee for Hawaii County that had hospital representation. I'm not sure what is meant by your statement, but we recognize that hospital EMS physicians do interact with EMS as Medical Directors and through Base Station meetings.
3. Page 29. **HMC also has issues funding on-call and is increasingly having to employ physicians; MMMC is paying physicians for call coverage.** Thank you for pointing this out and we are finding out more specifically about this issue with our current survey and visits.
4. Page 37. **Improve options for advancement within EMS – currently no incentive to stay on as EMS other than dedication.** Thank you for that comment. I assume by EMS you mean pre-hospital EMS and I believe it refers to most administrative jobs in HCFD being "fire" rather than "ems" jobs. The biennium budget request recently submitted by DOH includes 6 new EMS Supervisor positions for Hawaii County EMS. Beyond this, the administrative structure of a County service is not in the State's control.



Nancy W. Lundblad, M.D.

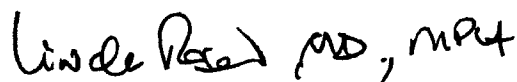
October 4, 2006

Page 2 of 2

5. **Page 38. Other political issues.....** Thank you for these comments. They relate to concerns regarding the impact of several state policies not within the control of EMS. We will do our best to have an inclusive, transparent, scientific planning process for the statewide trauma system and during any execution of systems changes.
6. **Page 46. How does Air One Med on Maui work and how is it funded?** I assume this question relates to the Maui County 911 Emergency Helicopter service. This helicopter service is funded in partnership between Maui County and the State. The medical flight crew consists of Maui County 911 EMS ground ambulance crew, already funded by the State through contract with AMR. The helicopter, pilot, fuel and maintenance are provided through a subcontract to AMR's County EMS 911 contract, the cost of which is split 50:50 between Maui County and the State DOH. The helicopter can be activated by EMS, police or fire personnel under specific guidelines to fly to pre-designated landing zones to pick up patients. It can also be requested by physicians for inter-facility transfers that are emergencies when there is no fixed-wing alternative available. The helicopter flies between all Maui County islands and Oahu. It can only fly when visual flight rules can be used so has limited use at night and during bad weather.
7. **Page 55. Pay for call is an issue at HMC.** See answer to 3 above. Also issue regarding transfer of patients to Maui is noted.
8. **Page 56. The third paragraph is incorrect...** We are aware that the comment on this page that North Hawaii Community Hospital is the only Big Island hospital to provide vascular surgery, cardiology and dialysis is incorrect. They do not provide vascular surgery or dialysis while HMC does. As noted on this page, there are no inter-facility transfer agreements between hospitals on the Big Island.
9. **Page 60. What are the recommendations for blood bank capacity and location for neighbor island trauma centers?** The comment in the ACS report on this page refers to the fact that some steps in assuring the supply of blood products for Hawaii are actually done on the mainland and they recommend that Blood Bank of Hawaii be at the maximum level of independence. There are no recommendations given for neighbor islands but we are looking at blood supply issues during our current survey.
10. **Page 63. What is Maui Air Ambulance and how is it financed? When did it achieve CON?** Please see answer to number 6 above. CON is not required for a 911 government service.

Should you have any further questions or concerns, please call me at (808) 733-9210 or via e-mail at [linda.rosen@doh.hawaii.gov](mailto:linda.rosen@doh.hawaii.gov).

Sincerely,



Linda M. Rosen, M.D., M.P.H.  
Chief, EMSIPSB

c: Mr. Ronald Schurra  
Lynda Dolan, M.D.

**HAWAII TRAUMA SYSTEM  
TRAUMA TRIAGE PLAN  
EMERGENCY MEDICAL SERVICES SYSTEM  
STATE OF HAWAII**

**1998**



**State EMS Medical Director**

**Date:** 11/12/98

BENJAMIN J. CAYETANO  
GOVERNOR



LAWRENCE MIKE  
DIRECTOR OF HEALTH

**STATE OF HAWAII**  
DEPARTMENT OF HEALTH  
EMERGENCY MEDICAL SERVICES SYSTEM

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In reply, please refer to:

December 1, 1998

EMS 98-1508

TO: Emergency Department Medical Directors

FROM: Gregory Gifford, M.D., JD *Greg Gifford*  
State EMS Medical Director

SUBJECT: EMS Trauma Triage Plan

Enclosed is a copy of the updated Hawaii Trauma System, Trauma Triage Plan for the Emergency Medical Services System. The plan reflects current hospital trauma care resources and capability to receive, treat or stabilize trauma patients.

We recommend the Trauma Triage Plan be made available for reference and/or orientation of new emergency department physicians.

If you have any questions, please contact Donna Maiava, Chief, Emergency Medical Services System at (808) 733-9210.

**II Section II. Consideration of Hospital/Clinic capabilities.**

Each hospital in Hawaii with emergency services shall be considered by the Department of Health as follows:

**TRAUMA CENTERS (TC)** which provides a 24 hour in-house trauma surgical trauma teams that are formally organized and dedicated to trauma care, and are capable of initiating and providing definitive medical care for all types of trauma.  
(Appendix A Classification as a Trauma Center)

**TRAUMA SUPPORT HOSPITAL (TSH) AND TRAUMA SUPPORT CLINIC (TSC)** which have 24 hour in-house Emergency Physician and Department of Health approval to receive patients transported by emergency ambulances.

**LEAD TRAUMA SUPPORT HOSPITALS (LTSH)** which are Neighbor Island TSHs that provide the highest levels of trauma care on those neighbor islands.

**RURAL FACILITIES (RF)** which do not have 24 hour in-house Emergency Physician coverage, but do have approval to receive patients transported by emergency ambulances.

**SPECIALTY SERVICE (SS)** may also be provided at a TSH and have specialty medical services such as burns (Straub), pediatrics (Kapiolani), decontamination capability (Pali Momi), Kaiser, Castle, St. Francis-West, Maui Memorial), or active duty military personnel hospital (Tripler).

The following hospital is considered a Trauma Center:

**Queen's Medical Center**

The following Neighbor Island hospitals are considered Lead Trauma Support Hospitals (LTSH) for their respective counties:

**Kauai:  
Maui:**

**Wilcox Memorial Hospital  
Maui Memorial Hospital**

**RE-TRIAGE** at the **TRAUMA CENTER, TRAUMA SUPPORT HOSPITAL, TRAUMA SUPPORT CLINIC, OR RURAL FACILITY** will be done on appropriate patients by the Ed Physician as soon as the trauma patient arrives. It will also be based upon the above considerations, and on the patient's prehospital course (i.e., changes in complaints and physical findings). The Emergency Department Physician may decide whether or not the patient needs to continue on the TC or LTSH, or to a TSH with a Specialty Service (SS). (This is current Oahu emergency medical service practice, known as the "Rapid Turnaround".)

At the TC or LTSH, after the trauma patient is definitively assessed and treatment performed and after an appropriate period of observation for that patient, the attending physician may decide that the patient does not require any further TC or LTSH level or care. The patient may then be **"BACK-TRIAGED"** and transferred, if appropriate, to a TSH in order to free up a TC or LTSH bed or in consideration of prepaid health care arrangements and provide the optimal use of trauma system resources. Initiation of plans for rehabilitation shall begin at the hospital at which the patient is admitted for definitive trauma care.

#### IV Section IV. PREHOSPITAL TRIAGE GUIDELINE DECISION SCHEME

##### A. SPECIAL CONSIDERATIONS.

COMMO WITH AND TRANSPORT TO NEAREST TSH OR TSC (or RF, if appropriate) for any trauma patient (adult, pediatric, or pregnant) IF:

PATIENT'S IMMEDIATE NEEDS UNMET IN THE FIELD  
(ET or surgical airway patient goes to TSH, TSC or RF first for such procedure before continuing on to TC or LTSH)

TRAUMA CODE (cardiac arrest)

IMMINENT CHILDBIRTH

##### B. VITAL SIGNS/LOC

Glasgow Coma Score	<13 or
Systolic blood pressure	<90 or
Respiratory rate	<10 or >29

**YES - GO TO TC OR LTSH**

NO - continue

**CHEMICAL CONTAMINATION (HAZMAT) COMMO WITH  
decontamination SS Hospitals (St. Francis West, Castle, Pali Momi,  
Kaiser, Tripler, and Wahiawa General)**

**MULTIPLE System Injury including specialty service problem (e.g., decontamination  
needed plus closed head injury, or extremity fracture plus severe burn, etc.)!**

**COMMO SIMULTANEOUSLY with TC AND appropriate  
Specialty Service Hospital for "DESTINATION REQUEST."**

**ACTIVE DUTY MILITARY PERSONNEL, COMMO with Tripler for patient  
destination and TRANSPORT TO TRIPLER MEDICAL CENTER, unless  
immediate surgery is needed.**

**If immediate surgery is needed COMMO with and TRANSPORT TO QMC.**

**If in doubt, COMMO with BOTH TRIPLER AND QMC.**

**F. TRAUMA IN PREGNANCY**

**The first priority in a pregnant trauma patient is to resuscitate the mother at a facility that  
treats adult trauma. Therefore, a pregnant trauma patient should be triaged, transported,  
COMMO made, and treated just the same as a non-pregnant trauma patient with the same  
injuries.**

**In trauma victims who are in late pregnancy, consideration can include taking the patient  
to a trauma facility that also has obstetrical services. On Oahu these hospitals have both trauma  
support services and obstetrical services:**

**Castle Medical Center  
Kahuku Hospital  
Kaiser Hospital  
Kapiolani Medical Center for Women and Children  
(Note: Kapiolani can support only MINOR ADULT TRAUMA)  
St. Francis Medical Center - West  
Tripler Medical Center  
Queen's Medical Center  
Wahiawa General Hospital**

**G. PEDIATRIC TRAUMA (age 13 years or younger)**

**1. COMMO DIRECTLY WITH and TRANSPORT to TC OR LTSH if:**

- penetrating injuries including gunshot or stab wound to neck,  
chest, or abdomen;

**Appendix A**  
**Requirements for Classification as a Trauma Center**

1. Commitment to making efforts to accept any major trauma patient.
2. Commitment to concept of "one telephone call does it all" - i.e., referring physician arranges and makes one call to receiving hospital emergency physician, who then contacts trauma surgeon. (Trauma surgeon may then call transferring physician.)
3. An immediately available (24 hour in-house) attending trauma surgeon who has completed his/her surgical training program (not a resident)
4. Immediately available (24 hour in-house) X-ray, CT scan, angiogram, and surgical capabilities.
5. Immediately available (24 hour in-house) trauma team members, to include the following:
  - emergency department physician
  - attending trauma surgeon
  - surgical resident
  - orthopedic resident or
  - orthopedic surgeon<sup>1</sup>
  - neurosurgeon<sup>2</sup>
  - anesthesiologist or CRNA
  - trauma resuscitation nurse
  - trauma support nurse
  - operating room nurse
  - trauma scribe
  - respiratory therapist
  - laboratory technician
  - x-ray technician
6. Available: social services
  - crisis nurse
  - ministry services

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<sup>1</sup> This requirement may also be fulfilled by an in-house surgeon who has special competence, as judged by the chief of orthopedic surgery, in the care of patients with orthopedic trauma, and who is capable of initiating measures directed toward stabilizing the patient as well as initiating diagnostic procedures.

<sup>2</sup> An attending neurosurgeon must be promptly available and dedicated to that hospital's trauma service. The in-house requirement may be fulfilled by an in-house neurosurgeon or surgeon who has special competence, as judged by the chief of neurosurgery, in the care of patients with neural trauma, and who is capable of initiating measures directed toward stabilizing the patient as well as initiating diagnostic procedures.

Neighbor Island Hospital Surveys and Visits

Tuesday, Sept. 19, 2006  
Hilo Medical Center

Tuesday, Sept. 26, 2006  
Maui Memorial Medical Center

Friday, Sept. 29, 2006  
Kona Hospital  
North Hawaii Community Hospital

Tuesday, Oct. 3, 2006  
Kauai Veteran's Memorial Hospital  
Wilcox Hospital