

EVALUATION OF TRAUMA SYSTEM IN ALBANIA USING AMERICAN COLLEGE OF SURGEONS BASIC CRITERIA: A CALL FOR SUBSTANCIAL REFORMS

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Abstract

Background: Trauma is major health care problem in Albania, which lacks an organized trauma system.

Methods: As part of the establishment of a teletrauma program in Albania, we evaluated the trauma system of Albania using the basic trauma criteria of the American College of Surgeons/Committee on Trauma (ACS/COT) as assessment tools.

Results: Albania has a dedicated trauma hospital with regional hospitals that provide trauma care, but trauma services, including injury prevention, pre-hospital, and hospital rehabilitation are in need of major reform in order to meet the basic requirements for a trauma system.

Conclusion: Albania is in need of transforming the current trauma system into a structured, organized, and coordinated system at all levels. In particular, there is a need for major reforms in the educational and professional preparation of trauma care providers.

Background

One of the most pressing health care issues in the Republic of Albania, a country in southeastern Europe with a population of over 3.24 million, and a size of 11,100 square miles (28,748 km²), is the lack of a comprehensive trauma system and

infrastructure. The mortality and morbidity rates from motor vehicle crashes manifest an increasing trend (1,2). In addition to road accidents, trauma related to homicide and intentional injury is a major concern, but exact data are difficult to obtain, as there is no one single agency in the country that collects and distributes these data. The United Nations Office on Drugs and Crime (UNODC), in its 2011 "Global Study on Homicide" reported high rates of homicide and intentional injury in Albania as well (3). Furthermore, the trauma system in Albania faces, on average, 2.5 to 3 deaths per day, according to the Causes of Death Report prepared by the Albanian Institute of Statistics (INSTAT). For road traffic accidents alone, the average stands at 1 death and 4 injuries per day (4).

Albania, a member of North Atlantic Treaty Organization (NATO), is undergoing a transition from an oppressive Communist regime, to a democracy with massive reconstruction of roads and overall infrastructure. But that massive reconstruction is associated with an increasing number of trauma-related fatalities and injuries. In addition to the absence of a dedicated and organized trauma system, Albania also lacks a professional training system for trauma surgeons and other trauma care providers. Moreover, untrained and uncertified personnel do prehospital care.

University Trauma Hospital (UTH), the former Military University Hospital in Tirana, is the only tertiary care center in Albania that admits trauma patients. With the country's population now exceeding 3 million people, the UTH annually admits 3,500 to 4,000 trauma patients and sees more than 35,000 patients (with various illnesses and severity of injuries). Thus, the UTH offers trauma-related care not only to patients with grave injuries and high morbidity but also to patients with trivial injuries.

Furthermore, Albania has had its share of disasters, both natural and man-made. In 2008, 26 people died and one is still missing, while 300 people were injured in an explosion that occurred at a munitions decommissioning facility in an ongoing program to dispose old military ordinances. According to the Government of Albania, approximately 10,000 people have been affected, of which 4,000 were evacuated from the area (5).

The ACS/COT criteria are often used as a foundation or framework for establishing US trauma centers. The main goals of these criteria are to increase the quality of care provided to trauma patients and to implement the practices and processes that reduce death and disability. The emphasis and concept of optimal trauma centers and trauma systems is to provide optimal care of the injured patients in a timely manner and in a hospital that has optimal human resources (6).

The aim of this study was to compare the trauma care provided in Albania with the basic ACS/COT criteria that are used for trauma systems, while determining whether or not this approach of assessment could also be used in other developing countries.

Methods

To evaluate the trauma system of Albania, we used the basic trauma criteria of the ACS/COT as assessment tools. We conducted a series of semi-structured interviews, unstructured interviews, focus groups, and a structured workshop, visited the UTH, and regional hospitals in the country, and the emergency center of the city of Tirana. In addition, we studied various documents (e.g., registers, patient charts) and existing work strategies of Ministry of Health of Albania.

Results

Albania has a dedicated UTH with ten other regional hospitals that provide some trauma care, although most injured patients end up at the UTH

even with trivial injuries. We have divided our study results based on the key components (incorporated below as boldface all-caps subheads) of the ACS/COT basic criteria requirement for trauma systems (Table 2), and report our major findings in relation to current trauma services in Albania. After each component we illustrate the key requirement, followed by our findings.

I. OVERALL SYSTEM ADMINISTRATION AND MANAGEMENT

1. TRAUMA SYSTEM DEVELOPMENT

Requirement: "System development includes system design, development of policies for prehospital/EMS [emergency medical service] system integration, adoption of current guidelines and standards for trauma care, solicitation of proposals from facilities seeking designation, and establishment of data collection processes necessary for effective system evaluation." (6).

Findings: Albania does not have a coordinated trauma system. Standards of care are not defined, especially in scene management for EMS providers. To this end, no established and formalized trauma system and trauma care guidelines and no effective communication mechanisms exist, despite the need to organize a prehospital/EMS system and to integrate it with the health care system and hospital trauma care system. No mechanism is in place to activate the trauma system or to ensure that injured patients are transported to the most appropriate trauma center.

2. DESIGNATION OF TRAUMA CENTERS

Requirement: "The lead agency must have the authority to determine the number of trauma centers, minimize duplication, and enable those hospitals that are most committed to maintain expertise. Designation policies should minimize duplication and excessive services to enable those hospitals that are the most committed to maintain their expertise and volumes of patients necessary to support quality care, research, and postgraduate education for physicians, nurses, and other health care professionals." (6)

Findings: One government "designated" trauma center, the UTH, was, until recently, under the jurisdiction of the Ministry of Defense, in the military hospital in Tirana. But no determined inspection

process exists for that hospital to ensure compliance with trauma center standards. Other patients besides trauma patients are cared for at the UTH, and trauma patients are cared for at other hospitals in various regions as well.

3. AN EFFECTIVE LEAD AGENCY

Requirement: *"The lead agency must integrate prehospital, hospital, and all other needs of both the providers and the public. This lead agency is usually placed within a governmental agency and must possess the authority, responsibility, and resources required by this broad role."* (6)

Findings: The Ministry of Health of Albania is the lead agency that has the overall authority for health care in the country, and is broadly responsible for funding allocations, legislation, and administration. However, in our study, we found that its role is not well defined in terms of the specific needs of a trauma system and that responsibility for the essential components of trauma care is spread across various governmental agencies.

4. LEGISLATION

Requirement: *"Trauma system development requires comprehensive legislation which addresses at a minimum the responsibility and authority necessary for implementation of the trauma system."* (6)

Findings: There is no official trauma system legislation that mandates, legislates, or specifically funds the trauma system. No established rules, policies, or statutes govern the trauma system.

5. FINANCING

Requirements: *"Trauma system plans must include a mechanism to identify potential sources of funding and to promote legislative efforts to secure this funding. Funding for a comprehensive trauma system must be dedicated to and sufficient to cover its development, implementation, delivery of care, and evaluation."* (6)

Findings: In our study, we did not identify trauma-funding sources in Albania. Money or funds are only going to hospitals to support patient care and staff salaries. The Health Insurance Institute (HII) gathers funds from taxes: 3.4% of an Albanian citizen's salary goes to the HII (1.7% from the employee and 1.7% from the employer). The HII funds help support physician salaries, hospital capital needs, and supplies. Because the UTH was until

recently under the Ministry of Defense's supervision, it is not financed by the HII. Moreover, official sources state that only the smaller part of the HII budget is funded through the insurance mandate. The largest part of its funding comes from the government's general fund and governmental subsidies.

6. MEDICAL LEADERSHIP

Requirement: *"Medical direction provides the operational framework for field personnel and seeks to assure appropriateness of all medical aspects of the prehospital program with the same professional accountability as medical care in the more traditional settings."* (6)

Findings: Currently in Albania, the role of an EMS medical director or trauma director is not recognized and not filled appropriately. The trauma director's position is more administrative and does not ensure true leadership of all aspects of trauma center and its programs.

7. TRAINING AND EDUCATION

Requirement: *"The trauma system cannot provide optimal care for seriously injured patients unless necessary trauma care personnel are adequately educated and available in sufficient numbers in all areas of the system."* (6)

Findings: At the UTH, we found that the hospital care environment has reasonable staffing infrastructure. The UTH team, that is in house 24/7, consists of general surgeons, orthopedic surgeons, and anesthesiologists—all present in the emergency department to provide care to incoming trauma patients. Other specialties, neurosurgeons, ear, nose, and throat surgeons, ophthalmologist, and vascular surgeons are on call from home. The neurosurgery resident is present in the hospital.

8. DISASTER MANAGEMENT

Requirement: *"The surgical community has an obligation to participate actively in the multidisciplinary planning, triage, and medical management of mass casualties following all disasters, natural or man-made. Trauma centers have a special obligation to participate in disaster preparation and management."* (6)

Finding: In July 2011, the Ministry of Health approved a comprehensive document known as the "General Platform of Ministry of Health for the Management of Risk and Disasters." The document

features separate chapters on managing disasters and mass casualties, including a thorough description of the systems that are in place. But in terms of implementation, it is not clear that personnel in the medical community, including at the UTH, are sufficiently aware of, or have received adequate training in, the particulars of this document.

II. PREHOSPITAL TRAUMA CARE

1. COMMUNICATIONS

Requirement: *"The communication component of the trauma care system plan should address system access, EMS dispatch, and dispatcher assistance to on-scene persons; general EMS communications linkages; and quality management program activities."* (6)

Findings: Currently, ambulances are notified of an injury in various ways. In pockets of the country, a national number 112 is being used to get help or call the police. But this number is not always used, and there are also local and regional numbers required to access emergency services. Since no formal communications or dispatch centers currently exist, we assume that the training for staff members who receive emergency calls is either very limited or nonexistent.

2. TRIAGE

Requirement: *"Triage is the process of sorting injured patients by actual or perceived degree, or risk, of injury and assigning them to the most appropriate regional care resources. Resources must be organized using a systems approach to plan for the rapid decisions required during initial treatment of trauma patients."* (6)

Findings: During our study period, we identified no trauma field triage criteria or standards in place that would properly define and identify a trauma patient and the transfer destination. Laypersons and police officers are usually the first to respond and often they take the patients to the destination facility.

There is a need for formal quality improvement process or monitoring that would determine the effectiveness of trauma field triage.

3. TRANSPORT

Requirement: *"Trauma patients should be delivered in a timely fashion to appropriate designated facilities utilizing the most expedient and appropriate means of transport."* (6)

Findings: Consistent with our study's other prehospital system findings; there is a great need of standards in prehospital transport of trauma patients in Albania. The ambulances in service have untrained drivers, with no care providers in the back. Governmental air medical transport systems for Albania do exist, but the aircraft is not well equipped, and the staff is not appropriately trained.

During our study, we noted that an ambulance donated by Japan to the Regional Hospital Durrës was stocked with appropriate and necessary equipment (such as long boards, defibrillators, monitoring devices, pulse oximetry, cervical spine collars, tourniquets, and airway and oxygen delivery devices). But no funding source exists to replace equipment after it is used or to train prehospital providers on proper usage of the equipment.

4. INTERFACILITY TRANSFER

Requirement: *"A critical component of a trauma system is the establishment of transfer agreements that ensure the unobstructed transfer of trauma patients between hospitals when there is a need to do so. Decisions to transfer patients should be based on objectively agreed-upon criteria. Guidelines for use in identifying those patients who would benefit by interfacility transfer to a trauma center have been established."* (6)

Findings: The transferring processes or protocols for injured patients are not defined. At the UTH, trauma patients from other hospitals show up, unannounced and unexpected, in an ambulance, with paperwork in hand documenting their assessment and findings.

In most cases, no physician-to-physician communication regarding the transfer takes place.

There is a need for transfer agreements to govern transport processes between facilities, as well as feedback mechanisms to help the sending facility understand the patient's assessment, evaluation, and treatment at the trauma center.

III. DEFINITIVE TRAUMA CARE FACILITY

Requirement: *"Conceptually, effective trauma systems must have a lead hospital. The lead hospital should be the highest level available within the trauma system."* (6)

Findings: The UTH is the “designated” definitive facility for trauma care and offers most clinical services, except for cardiac surgery. Another private hospital on the campus provides cardiac surgery services if needed.

1. KEY CLINICAL SERVICES

Requirements: “Trauma services comprise multidisciplinary key clinical and other collaborative services. These include general surgery, emergency medicine, neurosurgery, orthopedic surgery, pediatric surgery, anesthesia, radiology, critical care, and other surgical services (thoracic, cardiovascular, hand and microvascular surgery, plastic surgery, maxillo-facial, ophthalmology, ENT, and urology).” (6)

Findings: With the exception of cardiac surgery, all other clinical services are present in the UTH. For pediatric and obstetrics-gynecology (Ob-Gyn) surgery, surgeons come from the main University Hospital. However, there is no dedicated hand surgery service, and there is no microvascular surgery service: those services are provided by the plastic surgery service. Trauma surgeons perform all emergency surgery, as well as elective surgery—including endocrine and cancer operations.

2. Outreach, EDUCATION, AND INJURY PREVENTION

Requirement: “Injury is preventable public health problem, and well-planned community public information, education, and prevention program is an integral part of an effective trauma system.” (6)

Findings: In February 2011, the Council of Ministers in Albania adopted the “National Strategy 2011-2020 for Road Safety: Road Safety as a Right and Responsibility for All.” Although its implementation includes raising public awareness, Albanian citizens often take it upon themselves to transport individuals to the hospital, risking further injury by not using proper immobilization devices. A process is in place that requires Albanians who want to receive or renew a driver’s license to successfully pass a Red Cross first aid course. But no injury prevention program is staffed at any hospital. There is major need for public education in injury prevention.

3. REHABILITATION SERVICES

Requirements: “The rehabilitation of the trauma patient with the continual support of their family members is as important as any other system

component. In many cases, rehabilitation is the longest phase and the most difficult part for the trauma patient and family. Proper and early use of rehabilitation resources ensures the most rapid return of the patient to family, community, workforce, and society.” (6)

Findings: The UTH has no formal rehabilitation center and no specialized rehabilitation beds. Its physical therapy services are very limited. Furthermore, we found a basic lack of knowledge that such services should be at the UTH. No neuropsychiatry services or speech therapy services are available there.

4. DATA COLLECTION and trauma DATABASE

Requirements: “Data collection for each system component is the responsibility of all providers in a trauma system. Collating and recording these data are the combined responsibility of the individual provider institutions and the lead agency.” (6)

Findings: No formal prehospital registry and no formal trauma registry have been established for Albania. No systematic data collection is in place for capturing the volumes, case management, and outcomes of this patient population. Furthermore, the interventions are classified in a fashion that does not correspond to any international classification. For example, minor procedures, such as suturing a laceration, are classified as “microsurgery.” At the UTH, handwritten logbooks capture the volume of patients. The charge nurse or emergency department’s nursing leader captures and collates the statistics; some reporting mechanism ensures communication with the administration (which, in turn, issues other hospital reports). No electronic database exists that captures trauma patients’ assessment.

IV. QUALITY CARE IMPROVEMENT

1. EVALUATION and monitoring

Requirements: “A trauma care system plan must include the ability of the system to monitor its own performance over time and to assess its impact on trauma morbidity and mortality. To accomplish the goal of system review, the trauma system quality management program should interface with and include the trauma center quality management program.” (6)

Findings: Since no established trauma system exists in Albania, no formal evaluation of patients’ care or

of the performance of clinical activities is taking place.

2. Performance IMPROVEMENT and patient safety PROCESSES

Requirement: *"Performance improvement (PI) programs are necessary to ensure that the standard of care is met in caring for injured patients. A program for performance improvement should be included as part of the hospital designation criteria. However, evaluation at each trauma care facility will support the ability to do a comprehensive system analysis, and therefore warrants further specification in the evaluation component of the trauma care system plan."* (6)

Findings: In our study, we found no formal trauma performance improvements processes taking place at any of the hospitals. The lack of trauma registries makes such processes impossible and impractical. Nursing staff members do, at times, investigate issues in patient care, but formalized processes of review, documentation, and closure with thresholds and metrics do not exist.

3. RESEARCH AND INSTITUTIONAL COLLABORATION

Requirements: *"Ongoing systems research is necessary to guarantee the perpetual study, redirection, and improvement of trauma system design, and ultimately, trauma patient outcome. Validation of individual trauma care system components is necessary to ensure system efficiency and proficiency."* (6)

Findings: During our study, some participation in trauma-related research was evident. Most research initiatives, however, are individual, with case presentations and conference participation dominating. No dedicated research funds are available. The research resources, human and otherwise, are non-existent. Given the lack of established trauma-specific databases in Albania, it is very difficult to capture trauma data for research.

4. TRAUMA PROGRAM MANAGER AND TRAUMA REGISTRARS

Requirement: *"The trauma program manager (TPM) is fundamental to the development, implementation, and evaluation of the trauma program. Database analysts and trauma registrars are part of the trauma team as well. As a rule, one can identify a need for one*

additional registrar for each 750 to 1,000 admissions per year." (6)

Findings: The position and the role of the trauma program manager do not exist. Instead, trauma care is fragmented and delivered by nurses in the various patient care units. No one person is responsible for monitoring care to injured patients. The nursing staff members receive no oversight and no coordinated trauma-related education. No lead nursing position exists.

Discussion

Ever since 1976, when the ACS/CO published criteria for categorizing hospitals according to the resources required to provide various levels of care for traumatic injuries, trauma centers, at least in the USA, have played a role in reducing the mortality and morbidity of injured patients (6,7). Combined with regional or state-wide trauma systems, trauma centers have become an important factor for the management of injured trauma patients. In addition, trauma systems have been proven to reduce the mortality rate and increase the quality of care across the board (8-12).

It has been clearly demonstrated that the risk of death is significantly lower when care is provided in a trauma center than in a non-trauma center, especially for severe injuries (13). Such differences in mortality are even more dramatic in the developing world. For example, for severe injuries (Injury Severity Score 15-24), the mortality rate has been reported to be six times higher in low-income countries than with high-income countries (14).

Reducing the mortality and morbidity from trauma is far from easy. It requires extensive resources and experience, as well as political will and national commitment (12). Moreover, the educational process in the field of trauma must address a wide range of issues (including bioterrorism and disaster management) and must be synchronized with the development and implementation of trauma and emergency protocols.

The ACS/COT basic criteria for trauma centers are the state of the art for USA trauma centers, but there are other documents that can help ensure minimum standards of caring for injured patients as well. The WHO manual, *Guidelines for Essential Trauma Care*, created in collaboration with the International Association for Trauma Surgery and Intensive Care (IATSIC), set's forth a list of essential trauma services that are achievable in virtually every

setting worldwide, and then laying out the various human and physical resources that are needed (15-17). There are a number of positive elements at the trauma center at the UTH. At the UTH, the trauma resuscitation room is a de facto operating room and surgeons and anesthesiologists, away from the trauma resuscitations room crowd perform the resuscitation. Dedicated surgeons, anesthesiologists, nurses and others are always present in the emergency department for immediate patient evaluation. General surgeons perform all general surgery operations in the hospital, including elective endocrine or cancer operations.

To facilitate communications and inter-hospital transfer, Albania has installed a state-of-the-art telemedicine system, which it currently uses for teletrauma in addition to other clinical applications (18). The teletrauma network established throughout Albania has great potential to strengthen the relationship between hospitals and to improve the patient transfer process and make possible for physicians to consult with one another and see patients via this network. Real-time consultation can also occur through the teletrauma network. For example, if any of the Regional Hospitals has a patient with a head injury or spine injury, the computed tomography (CT) scan or magnetic resonance imaging (MRI) link could be electronically sent to the neurosurgeon at the UTH for advice, potentially saving not only the lives of patients but also the time and resources of the system. Furthermore, the teletrauma network and telemedicine educational centers has eliminated or reduced in great deal the need for medical staff to travel great distances for certification and training. A trauma e-library and a core trauma certification curriculum are being developed online, with electronic platforms shared nationwide.

Several major changes have already occurred in Albania as a result of our study. The UTH, once under Ministry of Defense, now is under the umbrella of the Ministry of Health. Furthermore, creation of the National Trauma Working Group has been initiated, and there is a real prospect of reforming the trauma and emergency systems in Albania. Obviously this requires tremendous resources, commitment, vision, and expertise; but the fact that we have a solid situational analysis and will to reform the system is a great step. It will take time for this initiative to produce the results anticipated.

Summary

The establishment of a structured coordinated and organized trauma system for Albania is a vital necessity. Trauma systems are indisputably beneficial and help reduce the number of lives lost to injury as well as the rates of disability. Its main trauma center and other regional hospitals must be accredited and verified on the basis of their levels of expertise when it comes to provision of trauma care, initially by the government and eventually by an international body, based entirely upon the international standards.

Designated trauma centers help improve the quality of health care not only for trauma patients but also for all other clinical services when these services are provided in a hospital with a trauma center. Our study focused on the *basic* ACS/COT trauma system criteria—assessment tools that we believe could be used in other countries that strive to establish a structured, organized trauma program. Further research, however, is required to validate our study.

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