

## Chapter 12

# TRAUMA – STRATEGIES & SOME INITIATIVES

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### Key Messages

- ▶ Motor cycle helmet is no doubt one of the most served safety devices in the transport field.
- ▶ “Safe bottle lamp foundation “has used a simple yet innovative technology in creating a safe bottle lamp to reduce the incidence of burn injuries.
- ▶ The concept of ‘Safe Community’ is an effective way of preventing injury that can easily be adopted in Sri Lanka learning from the experiences of other countries.
- ▶ Pre-hospital care is essential to ensure necessary medical attention until the patients are in the safe hands of doctors and nurses.
- ▶ Primary Care Unit improves the utilization of in patient services in the hospital while Emergency Treatment Unit provides rapid assessment and management.
- ▶ Uniform clinical guidelines are needed for the country while protocols should be formed according to the remaining facilities of the unit.



Strategies and programmes for prevention of trauma in certain levels such as safety promotion, pre-hospital care, in hospital care and rehabilitation is discussed in this chapter. By giving necessary attention injuries can be prevented by simple yet cost effective methods.

## 12.1 SAFETY PROMOTION

The interventions for prevention of injuries and promotion of safety are few in number, yet there are some that are exceptional in originality, simplicity and cost effectiveness.

### 12.1.1 PEDESTRIAN AND CYCLIST SAFETY

In terms of prevention of the pedestrians coming into contact with the motor vehicle, the principle is to keep the pedestrians away as far as possible from areas reserved for vehicles.

Interventions for improving the visibility of pedestrians and cyclists include:

- ▶ Advice on wearing light clothing after dusk and/or the use of reflector devices such as arm bands or vests made of reflecting material;
- ▶ Use of retro-reflectors on bicycles which are red, yellow or orange coloured (**Figure 12-1**); and
- ▶ Compulsory use of lights and reflectors on bicycles.



FIGURE 12- 1: RETRO-REFLECTORS FOR BICYCLES

### 12.1.2 RIDER SAFETY: USE OF HELMETS<sup>1</sup>

Motorcycle helmet has no doubt been one of the most served safety devices in the transport field for many years. It is believed that the motorcycle helmet has the capacity to reduce morbidity by 72% and mortality by 39%. In low and middle income countries 40% of deaths due to road traffic injuries are due to motorcyclists/bicycle riders where as 85% of motorcyclists die as a result of head injuries.

The practice of helmet wearing in Sri Lanka has become almost essential among riders over the decades. While Sri Lanka has maintained a high coverage of helmet wearing, many South East Asian countries with much higher density of motorcycles had low coverage. However these countries are picking up the practice fast. But the introduction of 'Mopeds' in large numbers to this country in recent times tells the story about how once established good practices can be challenged.

Wearing of helmets should not to be limited to be a "ritual", but should become a sensible thing. Selecting a good quality helmet as well as the correct way of wearing does matter.

<sup>1</sup>Anil Jasinghe: Media seminar First UN Global Road Safety week 2007

- Wearing a helmet has its own advantages:
  - ▶ Act as covering for the head;
  - ▶ Distribute a force over a greater surface area; and
  - ▶ Prevent the brain from moving fast.
- Following are important facts that should be taken into account by motorcyclists:
  - ▶ All should wear helmets irrespective of the age;
  - ▶ Children should wear the helmets that are specially designed for them;
  - ▶ Light coloured helmets are more suitable for night visibility;
  - ▶ Tighten the buckle properly when wearing a helmet and
  - ▶ Helmet should be readily replaced following a major accident.

### 12.1.3 DRIVER EDUCATION

Drivers must be educated regarding the causes of fatigue and micro sleep while driving. The medical conditions called “sleep apnoea” and “Disordered breathing” are causes of interrupted or light sleep resulting in daytime fatigue and drowsiness. These are treatable conditions.

Education regarding the hazards of driving in the rain, driving alone and driving after alcohol consumption needs to be especially given to night road users. It is interesting to also know and to give insight to all drivers as to why drivers of vehicles continue to drive when they feel sleepy. A common perception especially among younger drivers is that it is an admission on inferiority to declare that one is sleepy and not fit to drive. Ego pulls such people to their destiny.

Some others feel that they can make it to the destination, a common problem of over confidence. There are others who are compelled to work due to poor work hour regulations. They may feel that they may risk losing their jobs, that they may lose extra income in the form of overtime, or there may be no replacement to drive the vehicle on an important trip. Unfortunately these facts emerge usually only after a fatal accident has occurred.

### 12.1.4 SAFE KEROSENE BOTTLE LAMPS

Burn injuries due to kerosene oil lamps are really a global problem especially in countries in Asia and Africa. Every four days the Sri-Lankan government spends US\$10,000 to treat the burn victims. The injuries cause severe pain and disfigurement and the consequences faced are more drastic. What hurts most is that these injuries could have been prevented. The following account exemplifies an intervention done by a Consultant Surgeon, Dr. Wijaya Godakumbura.

The statistics reflect that one third of the burns are caused by unsafe kerosene bottle lamps. In 1992, Dr. Godakumbura launched a project by establishing an NGO called “Safe Bottle Lamp Foundation” (**Figure 12- 2**).

A simple yet innovative technology resulted in creating a lamp that was safe and user friendly. It was approved by the WHO, the International Society for Burn Injuries and four Sri Lankan organizations. Besides marketing safe lamps they also educate people on first aid and how to extinguish flames when in fire. Since then the incidence of bottle lamp burns and deaths have fallen. As only 21% of unsafe bottles have been replaced by safe ones so far, an intelligent marketing strategy is needed in order to replace the remaining 79% for the project to become a success.

### 12.1.5 SAFE COMMUNITY

A safe community is a community-based programme designed to prevent injury and promote safety. The concept of “Safe Community” was proposed during the first world conference on “Injury Prevention and Promoting Safety” that was organized by the Karolinska Institute of Social Medicine, which is a WHO Collaborating Centre on Community Safety Promotion. The criteria established by the WHO for a safe community includes the following<sup>1</sup>:



FIGURE 12- 2: SAFE BOTTLE LAMPS

- ▶ An infrastructure based on partnership and collaborations, governed by a cross- sectional group that is responsible for safety promotion in their community.
- ▶ Long-term, sustainable programs covering genders and all ages, environments, and situations.
- ▶ Programs that target high-risk groups and environments, and programs that promotes safety for vulnerable groups.
- ▶ Programs that document the frequency and causes of injuries.
- ▶ Evaluation measures to assess their programs, processes and the effects of change.
- ▶ Ongoing participation in national and international Safe Communities networks.

Safe Community model offers an approach to injury prevention and safety promotion. It creates an infrastructure in local communities, which is called “Safe Community Coalition”. Here, all the local communities work together through building relationships, to target injury related issues that are of significance in their local area and then organize solutions to address these issues. The key stages in developing a safe community are as follows:

- ▶ Using multiple sources of data to identify community injury problems;
- ▶ Identifying stakeholders who are able to involve in addressing the local injury problems;
- ▶ Developing a coalition among stakeholders to create local relationships;

<sup>1</sup>WHO Collaborating centre on Community Safety Promotion

- ▶ Planning and implementing long-term, sustainable programmes to promote safety and prevent injuries; and
- ▶ Evaluating and assessing the efficacy and cost-effectiveness of particular programmes through surveillance programmes.

The “Safe Community Model” has been used in developing and developed countries worldwide to reduce the health related, social and economic burden due to trauma.

Safe Community LIDKÖPING, Sweden was the first safe community project started in 1983-1984<sup>1</sup>. It implemented a number of programmes according to the age category of the inhabitants. Surveillance system was also established to evaluate the outcome of the project. Other safe community projects were also carried out in South Africa<sup>2</sup> and Vietnam<sup>3</sup>.

#### Safe Community LIDKÖPING, Sweden

- ▶ Number of inhabitants: 37,000
- ▶ Programme started in : 1983-1984
- ▶ "WHO- designation" year: 1989, 2003

#### Activities

- ▶ Children 0-14 years:
  - ➔ Group meetings for parents
  - ➔ Lending safety devices such as car safety cradles
  - ➔ Awareness programmes
- ▶ Youth 15-24 years:
  - ➔ Voluntary education for young car drivers, 18-24 years of age
  - ➔ Drug and alcohol policy for the community
  - ➔ Policies for the sports organizations
  - ➔ Local sports club educating children, parents and leaders in ethics, moral, drugs and alcohol
  - ➔ Specially designed bicycle helmet
  - ➔ A counseling centre for youth and their parents about alcohol and drugs
- ▶ Adults 25-64 years:
  - ➔ Neighborhood co-operation to prevent crime
  - ➔ Measures mainly worked out by the employer, the Occupational Health organization and the Rehabilitation Unit at the Health Centre
- ▶ Elderly 65+ years:
  - ➔ Physical and social activities arranged by the elderly organizations
  - ➔ Education, safety inspection and helping aids supplied by the Social Service Unit
  - ➔ Registration of accidents and injuries is established at all nursing homes and in home care services
  - ➔ Safety bags designed for the elderly
  - ➔ Exhibitions of safety equipment at the primary care health centre
  - ➔ A brochure concerning Safety equipment for the elderly

#### Safe Community BOARDLANDS PARK & NOMZAMO, South Africa

- ▶ Number of inhabitants:
- ▶ Broad lands Park: approx 10,000 – 15,0000
- ▶ Noxzema: approx: 15 000 – 20 000
- ▶ Programme started in: 1998

#### Activities

- ▶ Children 0-14 years:
  - ➔ First Aid
  - ➔ Home Visitation (Pilot) Program
  - ➔ Conflict Management and Communication
  - ➔ Traffic and Pedestrian Safety
  - ➔ Sport against Crime and Violence
  - ➔ Safe Schools Program
- ▶ Youth 15-24 years:
  - ➔ Safe Schools
  - ➔ Youth Mentorship Program
  - ➔ First Aid – level 1 & 2
  - ➔ Conflict Management
  - ➔ Prevention of Domestic Violence
  - ➔ Non – Violent Communication Methods
  - ➔ Disaster Management
  - ➔ Community Policing, Community Safety, Neighbourhood Forums
- ▶ Adults 25-64 years:
  - ➔ First Aid level 1 & 2
  - ➔ Prevention of Domestic Violence
  - ➔ Home Visitation
  - ➔ Conflict Management
  - ➔ Prevention of Alcohol & Drug Abuse
  - ➔ Non Violent Communication methods
  - ➔ Community Policing \_Community Safety & Neighbourhood Watch Forum
  - ➔ Disaster Management
- ▶ Elderly 65+ years:
  - ➔ Health Promotion activities, e.g. Diabetes Day / Alzheimer’s Day / Eye Care etc.

<sup>1</sup>WHO Collaborating centre on Community Safety Promotion

<sup>2</sup>Ibid

<sup>3</sup>Ibid

### Safe community DA TRACH, Vietnam

- ▶ Country: Vietnam
- ▶ Number of habitants: 5,188
- ▶ Programme started: 1997

#### ▶ Goal

To reduce the incidence of injuries and develop a safe community that can control injuries and the risk of injuries

#### Activities

##### ▶ Children 0-14 years:

- Provide information, education and communication materials for young parents
- Motivate and support households to develop good models of Safe Home: use of safe devices
- Raise awareness of parents related to safety and change unsafe behaviours of parents
- Provide consultation services on child safety
- Improve playgrounds

##### ▶ Youth 15-24 years:

- Safe playground in secondary school
- Undertake the Traffic Safety Program for Youths
- Develop a culture-life model
- Organize cultural clubs for youths

##### ▶ Adults 25-64 years:

- Information, communication and education on work safety, reduction of injuries and risk factors relating to agriculture production
- Develop the movement of cultural-healthy village towards a community without violence

##### ▶ Elderly 65+ years:

- Carry out the information, education and communication activities and support households to upgrade bathroom floor, courtyard and floor to prevent falls.
- Develop and encourage the elderly to follow the physical exercise movement
- Exhibitions of safety equipment at the primary care health centre
- A brochure concerning Safety equipment for the elderly

## 12.2 PRE-HOSPITAL CARE

Pre-hospital care encompasses the events and actions that take place from site of injury to delivery to the hospital. It is mainly about correct and safe transport to the hospital and provision of emergency medical care. The following description is on the current situation of pre-hospital care in Sri Lanka.

The main functions expected to be fulfilled by them were:

- Situational analysis: evaluation and reporting of current pre-hospital care programmes
- Visioning: development and promotion of a standardized system for the provision of pre-hospital care
- Standard setting: Development and promotion of national standards for the provision of pre-hospital medical care:
  - Requirements of personnel ambulance operations
  - Requirements of equipment for ambulance operations
  - Standard Operating Procedures for ambulance operations
  - Clinical guidelines /protocols for pre-hospital care
- Training and education: Evaluation and endorsement of educational programmes and facilities for Pre-Hospital care providers
- Promotion of legislation addressing issues of importance to the provision of pre-hospital care
- Establishment of a credentialing process for the pre hospital providers.

The Pre-Hospital Care System in Sri Lanka is diverse with many successful programs including local government operated systems, private services, hospital based services, and NGO operated services. One of the primary objects of the Pre-Hospital Care Sub-committee has been to coordinate the various approaches into a single, standardized, national approach to Emergency Medical Services. An example of the successful local government model is the Colombo Fire Brigade. The Colombo Municipal Council (CMC) and its partners established an emergency medical system in 2005. The CMC Fire Brigade recruited 30 personnel who have been trained as Emergency Medical Technicians (EMT) according to the international standards for pre-hospital care. Many of the EMTs have demonstrated international proficiency by passing the optional Australasian Registry of Emergency Medical Technicians board examination. Currently, with four ambulances operational 24 hours a day, this professional service is available free of charge for the residents of Colombo City.

Other examples of Pre-Hospital Care in Sri Lanka include a hospital based system in Galle, a hospital supported system in Kandy, NGO/community based systems in Hikkaduwa and Moratuwa, a Red Cross supported system, and private systems operated by Medi-Calls, and St. John's Ambulance.



In 2006-2007 over 250 people were trained according to international standards as Emergency Medical Technicians. Two-thousand patients have been successfully transported by ambulances with professional EMS staff, and no reports of harmful care, inappropriate treatment, or secondary injuries were reported.

#### **“A Look at Pre-hospital Care in Sri Lanka”**

*“Most of the time during accidents or in emergencies, that require immediate medical attention we are neither ready nor competent enough to carry out the precise and necessary actions and most of the time a hospital or a doctor is not readily available. This is why a Pre-hospital care is essential, as this system will ensure that the necessary medical attention would be given until the patients are in the safe hands of the doctors and nurses. Emergency Medical Care should be identified as a separate field. The Colombo Municipal Council (CMC), Fire Brigade Colombo, and St. John’s Ambulance have started a Pre-hospital care System in Sri Lanka, which is the first of its kind. Ambulances are an integral part of a Pre Medical System and the CMC, St. John’s and Medi-Calls are three organizations that provide the public with this service. CMC renders its services free of charge while St. John’s and Medi-Call are two private organizations. It is important for the private authorities not to compromise the standards of their services. By this the government sector would be automatically compelled to work towards improving their own standards of Pre-hospital care. As a result the entire system in the country will be strengthened. NGOs that work for a similar purpose should combine their efforts with the government in order to establish a lasting system...”*

- See Annexure 1 Case 2.6 for the full text

## **12.3 IN-HOSPITAL CARE**

In-hospital care is the component of the trauma system in which there are many competent human resources at the moment. However there is still a lot more work to be done. The following section looks into the different aspects of in-hospital care and some case studies.

### **12.3.1 PRIMARY CARE UNIT**

A Primary Care Unit (PCU) is a specialized unit in a hospital where patients are admitted for a short period of time for diagnosis and management purposes. Patients could be admitted from the ward or they may be walk-in patients. Unlike a ward, a PCU has to be attended by a post-intern Medical Officer. A medical officer of the relevant ward should attend the PCU at regular intervals and decide on whether the relevant patient needs to be admitted, transferred or can be discharged. Services are organized so that they address the needs and characteristics of the population that it serves.

The aims of setting a Primary Care Unit may include the following:

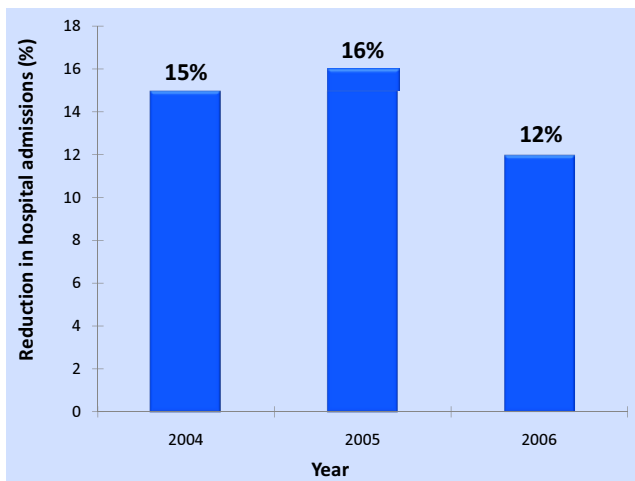
- ▶ To improve patient access to primary care
- ▶ Extend the range of services available to local people
- ▶ Advance the role of nurses
- ▶ Advance the role of GPs as specialists
- ▶ Develop the role of community hospital
- ▶ Improve the utilization of inpatient service at community hospital

An ideal PCU should contain the following:

- ▶ Separate wards for male & female patients
- ▶ Adequate number of beds
- ▶ Adequate number of examination rooms
- ▶ Rest rooms for doctors & nurses
- ▶ Emergency drugs trolleys with adequate medication
- ▶ Necessary investigations (e.g. USS, ECG, X ray, Cardiac monitor etc.)
- ▶ Basic instruments (e.g. suction apparatus, infusion pumps, NG tubes, ET tubes,)
- ▶ Ambulance for the transportation of emergency cases

It has been shown that having a PCU in an institution has demonstrated the following benefits for the institution, the patients & the community:

- ▶ Reduced number of unnecessary admissions to the wards;
- ▶ Saves resources;
- ▶ Reduced workload of the staff;
- ▶ Increased time to spend with the patients creating a closer relationship;
- ▶ Relaxed environment unlike in a OPD setting; and
- ▶ Better relationship with the community.



**FIGURE 12- 3:** BENEFITS FROM THE PRIMARY CARE UNIT IN BASE HOSPITAL HORANA

In Sri Lanka only a few hospitals are equipped with a PCU (e.g. Homagama, Horana, Ampara etc.).The Horana Base Hospital documented 15, 16 and 12% reduction in admissions in 2004, 2005 and 2006, respectively, as a result of patients being managed and discharged from the PCU (**Figure 12- 3**).

However most of the PCUs are facing many difficulties such as inadequate staffing, lack of proper training, poor organization of the unit and inadequate instruments.

### “Ampara General Hospital Preliminary Care Unit: Cut Down Unnecessary Admissions by almost Nine Thousand in 2005”

*“The concept of a PCU is somewhat new to this country, especially within the government sector. The essential ingredient is a team comprising of committed staff, well trained in this field. Ampara Hospital, which became a General Hospital in 2001, has a PCU, which has been functioning quite satisfactorily. The basic functions of the PCU are carrying out minor surgical procedures like suturing and removing of small lumps. It is seen that the number of admission to the wards has decreased dramatically since the implementation of this unit...”*

- See Annexure 1 Case 2.2 for the full text

## 12.3.2 EMERGENCY TREATMENT UNIT

### A. BACKGROUND ABOUT ETU

Emergency Treatment Unit (ETU) / Emergency Room (ER) / Emergency Department (ED), is a specialized unit within a hospital where patients are admitted for resuscitation and emergency management. The concept of an emergency department was developed in the 21<sup>st</sup> century to provide initial treatment to patients with a broad spectrum of illnesses and injuries which needed rapid assessment and management. ETU should be open throughout the day, 7 days of the week.

The necessity of the ETU was identified only in the early 20<sup>th</sup> century, with the 1<sup>st</sup> such institution being established in 1911 at the University of Louisville Hospital in the United States of America.

The layout of the ETU can depend on the hospital and the community that it serves. However in a typical ETU the following sections can be seen:

- ▶ **Triage** area – this area should have a specially trained Triage Nurse.
- ▶ Treatment area –
- ▶ **Resuscitation area** - There should be several resuscitation bays out of which, one should be specifically for pediatric patients. Each of the bays should be equipped with the following: Defibrillator; Airway equipment and Oxygen; IV lines & Fluids; Emergency drugs, etc.
- ▶ **Major area** – for stable patients who need immediate treatment
- ▶ **Minor area** – for stable patients (e.g. fractures, dislocations, Lacerations) who may not need immediate treatment
- ▶ **Paediatric area** – with a play therapist who would work towards reducing anxiety.
- ▶ **Waiting** area and reception area
- ▶ **Entrances** - should have at least 2 entrances, one for the patients brought by ambulance. The entrances should have direct, unobstructed access to the resuscitation area

- ▶ **Signage** – there should be a large sign with a red background. An arrow should indicate the entrance.

## B. SURVEY ON ETU IN SRI LANKA

The Trauma Secretariat and the EBM Study conducted a survey to assess and compare the trauma care facilities in Sri Lanka (see Chapter 16 for details). It was an analytical cross sectional study carried out in different ETUs. The hospitals with ETU facilities were identified by the data provided by the 26 RDHS in the country. A self-administered questionnaire was sent to each of the nominated institutions with filling instructions:

- ▶ Part 1: Filled by the nursing officer/ sister in charge of the ETU;
- ▶ Part 2 and 3: Filled by a medical officer; and
- ▶ Part 4 and 5: Filled by the most senior nurse of the unit.

Data collection instruments were designed to describe the status of existing ERUs. They focused mainly on 3 aspects which were identified as possible areas that could be influenced to improve.

- ▶ **Attitudes of the staff:** This was the most important aspect. For the proper functioning of a unit, all staff members need to believe in the necessity & the benefits. This is also one area that could be changes with proper interventions.
- ▶ **Knowledge & Skills of the staff:** For the proper functioning of a PCU or an ETU, it is essential that the staff is well trained in all the necessary areas.
- ▶ **Resource:** It is important to identify the equipments that are available at the disposal of the unit and their numbers so that they could be compared with what is recommended.

At the end of the survey the collected data was analyzed using SPSS.

### 12.3.3 CASE STUDIES ON QUALITY HOSPITAL CARE

#### “Protocols and Guidelines to Ensure the Standard of Medical Care”

*“With regard to medical care, Sri Lanka is now looking for quality and one way to ensure this is by setting up guidelines and protocols which would make sure that the required standards will be fixed at all times. Well-educated and experienced staff at the Accident and Orthopaedic Services (AOS) at the National Hospital Sri Lanka developed protocols for abdominal and chest injuries as well as guidelines on the use of antibiotics and management of patients with in-dwelling catheters. It is important that guidelines and protocols are followed by medical personnel. By modifying and changing the existing international manuals, guidelines with suitable context could be produced. Also it is better to have one uniform guideline for the country while protocols should be formed according to the prevailing facilities of the various units...”*

- See Annexure 1 Case 2.4 for the full text

#### “Educating the Medical Staff as well the Community on Trauma Care”

*“The training unit of AOS was established in 1991 under the FININDA project. It is the premier training centre on the management of trauma in Sri Lanka. Its programmes are offered to nurse and hospital minor staffs as well as to members of the armed forces, various government and non-government organizations. The training programmes are conducted at institutional as well as community levels and tailor made courses are available. The training programme at AOS focuses on areas like CPU, Primary trauma care, Neuro Trauma Care, Intensive care etc. The community level training programme concentrates on avenues like First Aid which are offered schools and various other institutions. It is pleasing to see that AOS has started training programmes to train three wheel drivers and hopefully they would extend this to all the other individuals as well as groups in society. The support rendered from the community as well as the doctors from the health Education Bureau is very strong.....”*

- See Annexure 1 Case 2.5 for the full text

#### “Professional Bodies Uplifting Trauma Care”

*““What is the standard of trauma care in Sri Lanka? If one goes into trauma care alone one would see many aspects that need to be developed to a great extent, for there prevails a system that lacks coordination as well as commitment at all levels. Yet it is remarkable to see certain individuals trying their very best to make a difference. Dr. Shirani Hapuaracchi has been conducting several training programmes in Sri Lanka with the hope of establishing coordination as well as commitment at the various levels of trauma care. As a result doctors are being trained in Primary Trauma Care. Dr. Ranjith Ellawala takes a special effort to keep the Ministry and the relevant groups updated on the global standards of trauma care so that Sri Lanka too could attain such levels. He has conducted several Primary Trauma Care Programmes in the peripheries and has contributed to the development of a course for doctors entering the field of surgery. The College of Anaesthesiology and the College of Surgeons have played an important part in the upliftment of trauma care. Having the support of their fellow colleagues makes it easier for them to implement various operational plans...”*

- See Annexure 1 Case 2.3 for the full text

## **12.4 REHABILITATION**

To upgrade the level of trauma care, the MoH opened a rehabilitation hospital at “Digana”. Furthermore the ministry is intending to open special rehabilitation hospitals at several districts island wide and a special hospital for the forces.

Chapter 13

# DEVELOPMENT OF A COORDINATED & SUSTAINABLE TRAUMA SYSTEM

## Key Messages

- ▶ The launching of the Trauma Secretariat was a step forward to ensure the sustainability of Ministry of Healthcare and Nutrition initiatives targeted at winning the war against trauma.
- ▶ The matrix on “Sri Lanka Trauma Centre Designation Criteria” categorizes the level of trauma care at different levels of the healthcare system.
- ▶ Trauma surveillance and quality assurance strengthens the foundation of a trauma system.
- ▶ “Emergency Ambulance Service\_110” in Sri Lanka is essentially an important stakeholder in pre-hospital care system.
- ▶ Trauma courses targeting both professionals and non professionals take a leading role in hospital care.
- ▶ Disaster preparedness minimizes suffering and to bring this about, the MoH has to collaborate with other ministries at national, provincial and district levels.





This chapter is mainly about the development of a sustainable trauma system, establishment of the Trauma Secretariat and other committees and proposals to expand them. The main objective was to oversee all aspects of trauma system development and establish acceptable levels of trauma care for Sri Lanka.

## 13.1 INSTITUTION BUILDING

### 13.1.1 TRAUMA SECRETARIAT

The Trauma Secretariat was established in September 2006. It is mandated to oversee all aspects of trauma system development. It adopted the vision proposed during the Policy Dialogue:

- ▶ Provision of timely, appropriate, quality and cost-effective medical care to trauma victims by a coordinated and sustainable trauma system with improved preparedness.

The official launching of the Trauma Secretariat in January 2007 boosted the current momentum among the stakeholders. It was another step forward at ensuring the sustainability of Ministry of Healthcare and Nutrition initiatives targeted at winning the war against trauma. This was also an opportunity to launch the official website (**Figure 13-1**) of the Trauma Secretariat (<http://www.traumaseclanka.gov.lk>), the theme song entitled “Vigilance” and an advocacy sticker “Let’s Partner for Our Safety”.

The sticker, distributed during the launching, was intended for the key stakeholders who were invited to the launching, for their colleagues and for their institutions. Getting the message across of building partnership was the priority communication strategy. The other part of the message was that the partners themselves will be the beneficiaries. Often, policy-makers, programme managers, implementers, project managers, funding agencies and other partners do not directly benefit from health interventions. In the case of road safety, for example, they too will be beneficiaries.



FIGURE 13- 1: WEBSITE OF THE TRAUMA SECRETARIAT



**FIGURE 13- 2:** STICKER FOR THE LAUNCHING OF THE TRAUMA SECRETARIAT

### 13.1.2 TRAUMA SYSTEM DEVELOPMENT COMMITTEE

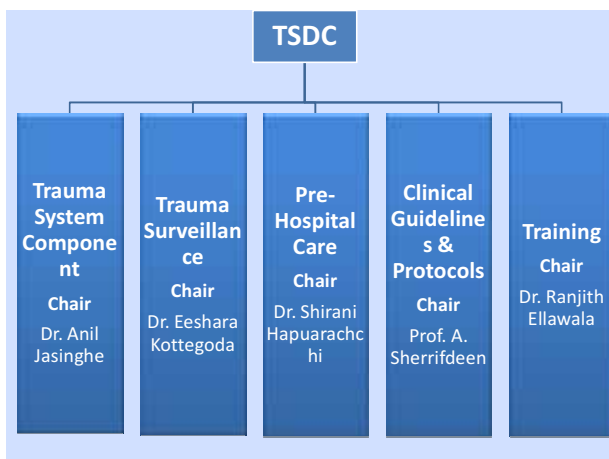


**FIGURE 13- 3:** LAUNCHING OF THE TRAUMA SECRETARIAT

The Ministry of Healthcare and Nutrition organised a Trauma System Development Committee or TSDC in June 2006. Members of the TSDC and

its subcommittees include the Deputy Director General (Medical Services), Deputy Director (Accident and Orthopaedic Services, National Hospital of Sri Lanka), and Chief Surgeon (Accident and Orthopaedic Services, National Hospital of Sri Lanka) as well as representatives from the pilot hospitals, professional bodies, trade unions, local and international non-governmental organisations, private sector and external development partners.

The TSDC performs an advisory role



**FIGURE 13- 4:** TSDC SUBCOMMITTEES

on technical issues to the Trauma Secretariat. It has five subcommittees working on various aspects of the comprehensive trauma system (**Figure 13-4**). To each subcommittee, a chair person and a group of members were appointed and were given authority to continue work. The final approval of each has to be taken from the Trauma System Development Committee.

### 13.1.3 PROPOSALS

#### A. FROM SECRETARIAT TO DIRECTORATE

The TSDC and the Policy Dialogue participants recommended that the Ministry of Healthcare and Nutrition works towards establishing a Trauma Directorate under the direct supervision by the Deputy Director General (Medical Services). As the focal point, the new directorate coordinate the comprehensive development of the trauma system. Specifically, its roles and responsibilities included:

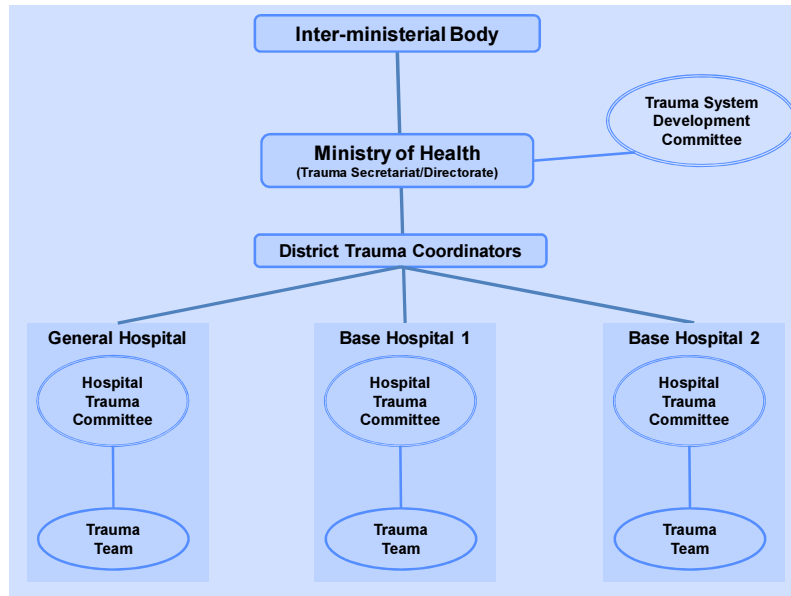
- ▶ Policy development, planning and resource mobilization;
- ▶ Quality assurance (e.g. trauma centre designation system, guidelines and protocols, development of performance indicators, audit mechanisms, quality improvement plan); and
- ▶ Training, surveillance and research.

#### B. EXPANSION OF TSDC

The Subcommittee on Rehabilitation and another Subcommittee on Safety promotion will be organised to attend to the two of the four elements of a trauma system.

#### C. NATIONAL, DISTRICT AND INSTITUTIONAL NETWORKS

At the national level, aside from the Trauma Secretariat and the TSDC, an inter-ministerial coordination body among the Ministry of Healthcare and Nutrition, Ministry of Disaster, Ministry of Education, and other related agencies were proposed (**Figure 13- 5**).



**Figure 13- 5:** TRAUMA SYSTEM ORGANISATIONAL STRUCTURE (WORKING DRAFT)

At the *district level*, a Medical Officer would be designated /appointed as the District Trauma Coordinator. The roles and responsibilities include coordination of all activities related to trauma care, oversee the implementation of guidelines and protocols, facilitate the development of institutional plans, and reporting of district-specific needs to the Trauma Directorate/Secretariat. The District Trauma Coordinator will be assisted by the Directors/ Medical Superintendents in hospitals categorized as Base Hospital and above consistent with existing normal administrative procedures. In a mass casualty, the relevant hospital Directors/ Medical Superintendent will directly report to the Trauma Directorate/Secretariat. In overwhelming disaster, the Director of General or Teaching Hospitals shall take the leading role in assisting other hospitals within the district. She/he will in turn be assisted by the Trauma Directorate/Secretariat and the District Trauma Coordinator.

At the *institutional level*, a Hospital Trauma Committee will be mandated to support the Deputy Director (Accident Services) in hospitals designated as level 1 trauma facility and the Director/Medical Superintendent in levels 2 and 3 hospitals. Among other things, the Hospital Trauma Committee will prepare hospital-specific guidelines for trauma management and identify training needs. It will be chaired by the Director (if it's a level 1 facility, then the Deputy Director for Accident Services) and will have the following, as members: surgeon/s, anaesthesiologist/s, specialised surgeons, matron, Medical Officer in Charge of Trauma Unit/OPD/PCU, and other representatives as the need arises. As the providers of trauma care, the Trauma Team will have the capacity to respond to poly trauma cases. The composition of the Trauma Team will vary in accordance with guidelines/protocols that will be developed for each level of trauma centre. In general, the Trauma Team will have a surgeon, an anaesthesiologist, nurses, and other supporting staff as necessary.

### 13.1.4 INITIAL TRAUMA POLICY DIALOGUE

The “Policy Dialogue” was organised on the 15<sup>th</sup> of June 2006 to initiate a discussion on key policy issues relevant to the development of a trauma system in Sri Lanka and to define the options for each of the issues.

Representatives from the following agencies were invited:

- ▶ Trauma System Development Committee;
- ▶ International and National organizations involved in trauma care;
- ▶ Relevant Deputy Director Generals (DDG) /Directorate in Ministry of Health, DDG (Medical services) DDG (Planning) Director (NCD), Director (Information);
- ▶ International Developmental Partners, WHO, JICA;
- ▶ Pilot Hospitals (TH Kalubowila, GH Kalutara, BH Horana and Panadura), Director or Medical Superintendent, a Surgeon/Surgeons;
- ▶ Provincial director of Western province, Deputy provincial Director of Health Services form Colombo and Kalutara; and
- ▶ Doctors and nurses union

The participants lauded the initiative taken by the Ministry of Healthcare and Nutrition in organising the policy dialogue as a manifestation of its commitment to reversing the increasing health, social and economic burden of trauma. Discussions were focused on issues related to the pre-hospital, hospital and disaster preparedness domains of the trauma system: organisational structure; roles and responsibilities; guidelines and protocols; training; financing; rules and regulation; quality assurance; and research. The participants proposed a common *vision* for the three groups: pre-hospital, hospital and disaster preparedness domains.

## 13.2 SYSTEM COMPONENTS DEVELOPMENT

### 13.2.1 TRAUMA SYSTEM COMPONENTS SUBCOMMITTEE

The Trauma System Components Subcommittee of the Trauma System Development Committee for Sri Lanka serves in an advisory capacity to the TSDC offering perspectives from a range of constituencies on all aspects of trauma system development. The trauma system comprises of four components- prevention, pre- hospital care, hospital care and rehabilitation. The Subcommittee ensures coherence among various activities of the four components.

The main concern was given to:

- Evaluation of the current status of trauma system components
- Development and promotion of trauma center designation categories
- Evaluation of facilities for trauma center classification
- Development and promotion of guidelines for trauma system components including:
  - Trauma center designation
  - In hospital trauma system organization
  - Infrastructure requirement for the trauma care
  - Inter facility transfers
  - Inter facility communications
  - Mass casualty incident and disaster response coordination plans
  - Coordination of stakeholders of trauma systems

Other priorities of the Systems Subcommittee are the development and promotion of plan for strengthening of components of trauma system, and working with the donors to achieve their common agenda.

### 13.2.2 WHO TRAUMA SYSTEM MATURITY INDEX



FIGURE 13- 6: A SUBCOMMITTEE MEETING

During its initial discussions, the Subcommittee considered the WHO Trauma System Maturity Index (referred to as the “Index”). As a system to assess the trauma care in a particular geographical area (e.g. district, province, country etc), the Index contains 4 levels, with level 1 being the least mature and level 4 being the most mature. Until all the aspects of one level are met, previous level of the index is applied. The index looks at four crucial areas of trauma care:

- Pre Hospital Trauma Care – This category is a very important aspect as proper pre-hospital care would save many lives. It takes

into account the availability of Emergency Medical Services (EMS), coordination and link between centres, availability of legislative mechanisms etc.

- ▶ Education and Training – This gives an idea about the education and training facilities available for the healthcare providers such as doctors and nurses at emergency rooms, paramedic training, training for ambulance personnel etc.
- ▶ Facility based Trauma Care – This gives an idea about the trauma care in different institutions in the area. For example, the clarity of the roles of secondary and tertiary facilities in the area, the presence of referral linkages, the availability of human and physical resources, the presence of a lead agency etc.
- ▶ Quality assurance – Quality assurance has taken into account areas such as the availability of trauma surveillance, availability and the attempts made to analyze such data, presence of quality assurance programs etc.

The Subcommittee noted that Sri Lanka currently fits some criteria of Level 2 development and some criteria of Level 3 development.

### 13.2.3 WHO RESOURCE MATRIX

Among the many concerns of the Subcommittee, the issues of trauma centre designation and accreditation standards were prioritised because different types of institutions provide services at different levels when treating trauma victims. The “Resource Matrix”, which was developed by the WHO, contains a description of resources (human & physical) that need to be available for the provision of specific categories of care at different levels of the healthcare system (WHO, Guidelines for Essential Trauma Care). In this, the healthcare system is categorized into four types according to the different levels of services expected to be provided:

- ▶ Basic facilities –Village health posts (non doctors), Primary Health Care Clinics staffed by doctors;
- ▶ Hospitals staffed by general practitioners;
- ▶ Hospitals staffed by specialists; and
- ▶ Tertiary care hospitals.

The Resource Matrix divided the areas of trauma management into 14 categories, e.g. Airway management, Breathing, Circulation and Shock, Head Injury, Neck Injury, Chest Injury, Abdominal Injury, Burns and Wounds, Rehabilitation, Safety for Healthcare Professionals etc. For each category, the specific elements of Trauma care are divided into two aspects: Knowledge and Skills; and Equipment and supplies.

### 13.2.4 SRI LANKA DESIGNATION OF TRAUMA CENTRES

In Sri Lanka, the Policy Dialogue participants proposed a categorization of trauma centres based on the initial works of Dr. A. Jasinghe that was published in the Sri Lanka Journal of Medical Administration<sup>1</sup>. The designation of trauma centres divides the institutions into four levels, with

<sup>1</sup>Jasinghe, 2005-2006: A Proposal for a System Approach in Emergency Medical Services

level 1 providing the highest care and level 4 being the centres providing only the minimal care. It considers two areas in an institution:

- ▶ Facilities – The availability of accident and Emergency services, ICU, Theatre facilities, the presence of a critical area, the number of beds etc.
- ▶ Staff and Services – This includes the working hours of the trauma services in the institution, availability of specialists (General surgery, Orthopaedic surgery Neurosurgery, Thoracic surgery, vascular surgery etc.), the availability of transfer facilities etc.

Level 1 trauma centres will have a degree of autonomy. The Accident & Emergency Deputy Director will manage day to day work and finances. In levels 2 & 3 facilities, the Director/Medical Superintendent will be supported by the members of the Hospital Trauma Committee.

**TABLE 13- 1: DESIGNATION OF TRAUMA CENTRES (WORKING DRAFT)<sup>1</sup>**

Level	Facilities	Staff and services
I	<ul style="list-style-type: none"> <li>▪ Separate Accident Services and Emergency Medical Services Departments</li> <li>▪ Critical care area with 3 bays</li> <li>▪ 2 dedicated casualty theatre suites</li> <li>▪ ICU (at least 6 beds)</li> <li>▪ Adequate observation beds</li> </ul>	<ul style="list-style-type: none"> <li>▪ With 24 hour staffing:</li> <li>▪ Neurosurgery</li> <li>▪ Thoracic surgery</li> <li>▪ Burns</li> <li>▪ Vascular surgery</li> </ul>
II	<ul style="list-style-type: none"> <li>▪ The hospital concerned may have accident services and emergency medical services in one Department</li> <li>▪ Critical care are with 2 bays</li> <li>▪ Dedicated casualty theatre with ICU</li> <li>▪ Adequate observation beds</li> </ul>	<ul style="list-style-type: none"> <li>▪ General surgery</li> <li>▪ Orthopaedic surgery</li> <li>▪ ENT</li> <li>▪ Ophthalmology</li> </ul>
III	<ul style="list-style-type: none"> <li>▪ Accident services and emergency medical services are in one Department</li> <li>▪ Critical care with 1 bay</li> <li>▪ Theatre is shared with others</li> </ul>	<ul style="list-style-type: none"> <li>▪ General surgery</li> </ul>
IV	<ul style="list-style-type: none"> <li>▪ Accident services and emergency medical services are in one Department in District hospitals, Peripheral unit and Rural hospitals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Primary Care Unit</li> <li>▪ Basic trauma and critical care treatment and stabilization</li> <li>▪ Designated transfer arrangements to higher levels of care</li> </ul>

The matrix on “Sri Lanka Trauma Centre Designation Criteria” has been prepared and needs to be edited and standardized to finalize the document.

<sup>1</sup>Jasinghe, 2005-2006: A Proposal for a System Approach in Emergency Medical Services



### **13.3 TRAUMA SURVEILLANCE AND QUALITY ASSURANCE**

Trauma surveillance and quality assurance are envisioned to strengthen the foundation of a trauma system. During the developmental stage of the surveillance system, the Surveillance Subcommittee of the TSDC promoted the concepts of trauma surveillance, developed and pilot-tested a surveillance instrument, and monitored the pilot implementation (refer to Chapter 15).

Aside from the surveillance system, internal reviews and external audits will be conducted in the future as part of the quality assurance programme. Publication of half yearly and periodic reviews will be started to ensure that the collected data are disseminated effectively for appropriate decision and action by policy-makers, programme managers, institutional heads, health service providers, development partners and others.

Together with the Head of the Trauma Secretariat and the Project Manager of the AmeriCares Foundation, the Chairman of the Trauma Surveillance Subcommittee attended the WHO-sponsored “Bi-Regional Workshop on Injury Surveillance” from 18 – 21 December in Chiang Mai, Thailand. This conference was attended by participants from 20 countries in SEARO and WPRO regions.

### **13.4 SAFETY PROMOTION**

A consultative workshop was held with the participation of RDHS officials and MOH from Kalutara. A pre-tested self-administered instrument was used to better understand the ongoing activities and perspectives of leaders of public, private and non-governmental organisations that have actually been dealing with or are potential partners for safety promotion. The potential partners include those from sectors other than health. Results of the survey are in Chapter 2.

### **13.5 PRE-HOSPITAL CARE**

Pre-hospital care is essentially transporting the trauma victim correctly and safely to the hospital. The Pre-hospital Care Subcommittee adopted for its mission the reduction of morbidity and mortality of the injured by preventing secondary injury. The Subcommittee is involved in setting standards, developing guidelines and protocols, training and education, credentialing, promotion of legislation etc.

The main attention was given to the upgrading of the “Emergency Ambulance Service\_110” in Sri Lanka. Several issues are currently being evaluated by the committee in relation to this aspect.

#### **13.5.1 DISTRIBUTION OF THE SERVICE IN OTHER DISTRICTS**

At the moment this emergency service is situated only in the Colombo municipal council (Western Province). Nonetheless, the process of setting up a pre-hospital care system under the Dehiwala Mount Lavinia Municipal Council has been initiated. The mayor has given the sanction for the fire

brigade to recruit fire men. The training will commence as soon as the new recruits are in service. The project is presented to the Treasury for the approval of the budget. Training firemen from Dehiwala- Mount Lavinia Municipal Council will be done according to the WHO guidelines. In another six months emergency ambulance service will be extended to Panadura.

### **13.5.2 PUBLIC AWARENESS**

To improve awareness about the emergency services among general public, the committee is focusing on the possibility of using private bus services and the Eagle Insurance Company as means of advertisers. Currently a meeting with both parties is to be arranged for the evaluation of the possibility of their involvement.

### **13.5.3 PROVISION OF TRAINING**

The committee is trying to widen the horizons of the standards of training rescue officers/ Emergency Medical Trainees by incorporating international standards to the training programs and examinations. In collaboration with the Medical Teams International, the Pre-Hospital Care Subcommittee has designed a refresher course for firemen who run the Colombo Emergency and Rescue System. Internationally recognized “Australian Certificate Course” is to be introduced to Sri Lanka. The training will be done centrally and locally in two levels (Level 1: basic training and Level 2: Advanced Training).

### **13.5.4 DRAFTING A PROPOSAL ON THE “EMERGENCY AMBULANCE CERTIFICATION REQUIREMENTS”**

These regulations may be cited as “Emergency Ambulance Certification Requirements” as adopted by the Pre-Hospital Care Subcommittee. The purpose is to reduce the morbidity and mortality associated with trauma for the citizens and visitors of Sri Lanka by differentiating ambulances specifically equipped, and staffed by personnel trained to provide out-of-hospital treatment for the traumatically injured patient. Organizations and authorities operating ambulances in Sri Lanka that meet the minimum standards outlined in this document may request the Trauma Secretariat to designate them as an Emergency Ambulance Provider and affix the Trauma Secretariat logo on the ambulance. The draft document on “Emergency Ambulance Certification Requirements” will be submitted to the TSDC and then to the Ministry of Healthcare Nutrition for the approval.

## 13.6 HOSPITAL CARE

### 13.6.1 CLINICAL PROTOCOLS AND GUIDELINES

National guidelines and separate institutional guidelines/protocols on all aspects of the trauma system will be developed to assist the Trauma Teams, Hospital Trauma Committees, and other key players in the performance of their roles and responsibilities. This is the main focus of the Clinical Protocols and Guidelines Subcommittee. In the formulation process, the Subcommittee mobilised the participation and incorporated the perspectives of a wide range of constituencies. Priority was given to the development of clinical guidelines, patient referral and ambulance management. Existing protocols from various hospitals/groups were collected and reviewed. The WHO Essential Emergency Equipment List was the reference for the Sri Lankan guidelines to ensure that the necessary equipment and facilities are available to provide better trauma care. The protocols and guidelines will ensure that good medical practices are passed on to the next generation of practitioners and medical care workers thereby enhancing the quality of the trauma system. The standardized guidelines and protocols have been formulated.

### 13.6.2 TRAINING

The Training Subcommittee is mandated to oversee the four areas of training: coordination, standard-setting, needs assessment, and programme development. It will accredit training programmes and/or centres as well as standardise training modules for each level of trauma facility. It will develop performance indicators.

There are at least seven trauma courses targeted for various groups, including both professionals and non-professionals, which are available internationally and locally:

- ▶ Primary Trauma Care Course;
- ▶ Advanced Trauma Resuscitation and Initial Management for Surgeons;
- ▶ Advanced Trauma Life Support course;
- ▶ Early Management of Severe Trauma;
- ▶ National Trauma Management Course;
- ▶ Definitive Surgical trauma Care; and
- ▶ Trauma course for nurses.

#### A. PRIMARY TRAUMA CARE COURSE (PTC)

This course is conducted under the auspices of World Federation of Societies of Anaesthesiologists since 1996. In order to undertake the training, Sri Lankan surgeons and anaesthetists were trained in January 2003 after which, this course has been a regular event. PTC is accepted by 32 countries in South America, Africa, Asia and South Pacific. It includes manuals, didactic lectures, discussions, skills, and pre & post test multiple choice questions. The course covers the management

during early hours after injury. Although the original course was for two days, a one day course is conducted due to certain difficulties that arose. This is conducted free of charge. The target trainees are doctors and nurses who deal with injuries. A certificate is issued to participants at the end of the course. It has already trained about 2000 personnel involved in the management of a trauma victim. Three sessions were conducted at the Colombo South Teaching Hospital for the doctors and nurses.

**B. ADVANCED TRAUMA RESUSCITATION AND INITIAL MANAGEMENT FOR SURGEONS (ATRIMS)**

This is being conducted by the College of Surgeons of Sri Lanka since 2004. The target audience is doctors who have passed MS surgery part I who will surely take up surgery as a career. It is conducted over two days and concentrates on Advanced Trauma Life Support (ATLS) principles. However the contents are more advanced than the ATLS therefore making it unsuitable for the general audience. It includes operative surgery skills as well). The course is not internationally recognized and there is no international input. There are 11 resource persons involved and 2 workshops per year are held at the College of Surgeons of Sri Lanka. The course includes didactic lectures, manual skill stations, discussions, Multiple Choice Questions, and Objective Structured Clinical Examination. A fee of Rs.2500/- is charged for the course at present. There have been 6 two day courses held so far.

**C. ADVANCED TRAUMA LIFE SUPPORT COURSE (ATLS)**

This course is provided by the American College of Surgeons. It is the longest standing and widely utilized Trauma course conducted worldwide since its induction in late 1970. It is considered as the Gold Standard of the trauma courses available throughout the world. It includes didactic lectures, skills enhancement, manuals, discussions, multiple choice questions and a certificate. It has been established in more than 43 countries. It is ideal for countries with a good trauma infrastructure. But a few low-income countries have acquired it. The cost of establishing the course in a country is around \$ 80 000.00. The course fee is around \$ 600 per candidate. A refresher course is required every 4<sup>th</sup> year. Trainers need regular refresher courses.

**D. EARLY MANAGEMENT OF SEVERE TRAUMA (EMST)**

This course is conducted by the Royal Australasian College of Surgeons. It is based on the ATLS principles and is being conducted in Australia and New Zealand. This course has not yet been established outside the two countries. A course fee is around Aus\$ 1998.00 or NC\$ 1900.00. The course includes didactic lectures, skills, manual, discussions, MCQs and a certificate. The course is conducted over two days and 7-8 trainers conduct it for 16 participants.

#### E. NATIONAL TRAUMA MANAGEMENT COURSE (NTMC)

Originally this was a course created by the International Association of Trauma and Surgical Intensive Care (IATSIC) under the International College of Surgeons in Basel. The Academy of Traumatology in India has conducted more than 40 workshops of the NTMC since 2000. The course includes a manual, didactic lectures, skills, discussions, and MCQs. It runs for over two days. The registration fee is Indian Rupees IRs.2500.00. There is no start up fee involved.

A curriculum was prepared for the National Trauma Management Course (NTMC) and listed under the College of Surgeons. Six international trainers were invited. However, this course had to be postponed as a result of the prevailing situation of the country. It is expected to start in 2008.

#### F. DEFINITIVE SURGICAL TRAUMA CARE (DSTC)

This course is similar to ATOM (US) and DSTS (UK). It is more advanced than ATLS which teaches the definitive surgical approach to major trauma. The essential part of the course is operative surgery sessions on live animals. DSTC is offered by the IATSIC. This includes teaching the core curriculum and adds on modules depending on the requirements of the country. The course includes a manual, didactic lectures, skills, discussions, MCQs and operating on anesthetized animals. Course usually lasts for 2.5 days. Course fee is around \$ 500 but vary according to the country.

#### G. TRAUMA COURSE FOR NURSES

The three day training programme for the nurses at the National Hospital Sri Lanka will be reviewed by the Training Subcommittee and then modified to the requirements. Once the training manual and the material is finalized, the training will be initiated at the pilot hospitals and then in the other hospitals island wide.

Aside from the trauma course for nurses, only three other programmes were considered by the Training Subcommittee as appropriate for Sri Lanka. **Table 13-2** summarised the key features of these 3 programmes.

**TABLE 13-2: TRAINING PROGRAMMES FOR CONSIDERATION**

	<b>Primary Trauma Care Course</b>	<b>Advanced Trauma Resuscitation and Initial Management for Surgeons</b>	<b>National Trauma Management Course</b>
<b>Organisation</b>	World Federation of Societies of Anesthesiologists	College of Surgeons of Sri Lanka	International Association of Trauma and Surgical Care Intensive Care
<b>Trainees</b>	Doctors and Nurses	Doctors who have passed MS Surgery part I.	
<b>Course Content</b>	Management during early hours after injury	Advanced Trauma Life Support (ATLS) principles	Management of Trauma injuries
<b>Course Duration</b>	One day	Two days	Two days
<b>Course fee</b>	Free of charge	Rs. 2500	Rs. 2500

## 13.7 DISASTER PREPAREDNESS

The vision of this worthy endeavour is “Minimal suffering due to trauma through better preparedness”. The mission is to contribute to the overall trauma management by ensuring effective preparedness to respond by all stakeholders at all stages of trauma management. The objective is to bestow maximum benefit to the victims/ patients by ensuring rapid and effective response to disasters by all stakeholders, by minimizing the adverse effects of the disaster as well as those of its management, and by ensuring optimal utilization of resources. The strategies should give priority to prevention and include strengthening of the capacity at institutional and community level, involvement of all stakeholders, continuous monitoring of capacity, and continuous education and training. The following activities were proposed:

- ▶ Securing legal mandate;
- ▶ Coordination among stakeholders - line ministry, provincial councils, local authorities, others;
- ▶ Establishing advisory and action groups;
- ▶ Appointing focal points;
- ▶ Preparation of preparedness plans, hospital plans and community-based preparedness plans;
- ▶ Capacity building – resources (e.g. prioritization), training (i.e. mandatory training in basic trauma care), drills (institutional and community base);
- ▶ Systems development – information, surveillance, early warning, communication (first contact point for the hospital, transport, emergency team, receiving team at hospital, security focal point);
- ▶ Response plan (at the site, hospital, OPD, other units, transfer to specialized units);
- ▶ Logistics;
- ▶ Education;
- ▶ Monitoring & evaluation; and
- ▶ Quality assurance.

At the national level, the Ministry of Healthcare and Nutrition will play a significant role in policy development, inter-agency coordination, training, preparedness planning, response, and financing. At the provincial level, the Provincial Ministries of Health will take the leading role in preparedness planning, training and response. The Department of Police will be responsible for law enforcement whereas the Ministry of Road Development for mitigation at both the national and provincial levels. Focal points at the district, divisional, institutional, and community levels will be appointed, trained and supported. Stakeholders will be mobilized to participate in national and local steering committees, focal points, action groups and support groups.

The capital and recurrent expenditures for disaster preparedness will be sourced from the government, donor funds, community and commercial sector. Efficient management of contingency funds will be essential to ensure financial sustainability. A study on the inclusion of mandatory

coverage of pedestrians and passengers into the motor vehicle insurance is necessary. The Social Security System will be considered as a supplementary source of financing.

On top of a clearly defined assignment of rights & responsibilities for institutions and individuals as well as sustainable financing mechanisms, the following are required for disaster preparedness: laws to provide overall framework; regulations that will define standards; and economic incentives or disincentives (e.g. subsidies for the disadvantaged, fines for failure to comply).

For monitoring and evaluation, the following indicators may be considered:

- ▶ Input – financial & manpower;
- ▶ Process – legal & administrative;
- ▶ Output – training & education;
- ▶ Impact - response time & participation of other stakeholders; and
- ▶ Others - financial expenditure, number of health Institutions with preparedness plans, number of persons trained, number of educational programmes held, time taken to respond, and rate of complications.

Three systems will be the cornerstones of quality assurance: information system; benchmarking system; and audit system.



## Chapter 14

# SAFETY PROMOTION: AN INITIAL STEP

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### Key Messages

- ▶ Through the First United Nations Global Road Safety Week a voice is given to young people.
- ▶ Media Seminar and the exhibition with the theme of “Help Reduce Accidents” at NHSL focused on the issues of prevention of road traffic injuries.
- ▶ Base Hospital Horana and General Hospital Kalutara organized an array of activities in parallel with the NHSL to celebrate the Road Safety Week.
- ▶ The UN Global Road Safety Week dedicated on young road users was commemorated at pilot hospitals.



This chapter discusses the safety promotion activities carried out during the First U.N. Global Road Safety Week which was focused on young road users. Exhibitions, media seminars, video presentations, street dramas and school education programmes were the local activities held under the theme of “Help Reduce Accidents” to commemorate this week.

## 14.1 U.N. GLOBAL ROAD SAFETY WEEK

In December 2005, United Nations General Assembly resolution A/60/5 on improving global road safety called for a Global Road Safety Week. The resolution followed others from both the United Nations General Assembly and the World Health Assembly that reflected the growing concern over the problem of road traffic injuries on the part of governments and of the international public health and development communities. The Week was to be modelled on previous Road Safety Weeks organized by the United Nations Economic Commission for Europe and on World Health Day 2004. Fortunately, there is a growing recognition that road traffic injuries can be prevented. It has been demonstrated in a number of countries that by acting on key factors, in particular drink-driving, speeding, the wearing of helmets and seat-belts, and road design and infrastructure, a significant number of lives and financial resources can be saved even as motorization continues to rise<sup>1</sup>.

The health sector is concerned about road safety for three main reasons<sup>2</sup>. First, apart from the tragedy of lost lives, injuries require trauma care and rehabilitation that can strain the capacity and budgets of health services. Second, public health must always be concerned when a major cause of morbidity and mortality is largely preventable. Third, in every country on every continent, young people are the most vulnerable to deaths and injuries on the roads. They deserve protection.

While individual countries must clearly assume responsibility, the international community can also help. This week marks the first United Nations Global Road Safety Week, focused on young road users.”

The minister said:

*“Even though road traffic injuries are not directly related to the Ministry of Healthcare and Nutrition the impact of them directly burden it. Therefore it is of utmost importance to focus on the preventive aspects of the road traffic injuries, thereby reduce the cost spent by the health sector for the management of trauma cases.”<sup>3</sup>*

The attention of the public has to be focused on the following issues:

- ▶ Educate the public on the advantages of driving schools;
- ▶ Making awareness of other road users (passengers, cyclists) on road rules;
- ▶ Harmful aspects of drunken driving;

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<sup>1</sup>Chan, 2007

<sup>2</sup>Borra, 2007

<sup>3</sup>De Silva, 2007

- ▶ Need of enforcement of laws on employers' responsibility on safeguarding their employees ( e.g. drivers);
- ▶ Insurance compensation to the hospitals following a road traffic accident; and
- ▶ Changing attitudes of public towards road safety.

Through the World Youth Assembly for Road Safety – the key global event of the First United Nations Global Road Safety Week – the World Health Organization, United Nations Regional Commissions and their partners are giving a voice to young people<sup>1</sup>.

- The week was to be commemorated with the objectives of :
  - ▶ **Raising awareness** about the impact of road traffic injuries, particularly among young road users;
  - ▶ **Promoting action** around the factors with the greatest impact on road traffic injuries: helmets, seatbelts, drink-driving, speeding and road design and infrastructure.
- Whatever form of events was planned for the week, it was to be useful to articulate them around the following key messages:
  - ▶ Road traffic injuries are a major global public health and development problem. Their magnitude is expected to rise considerably in the years ahead.
  - ▶ Road traffic injuries greatly impact upon young lives.
  - ▶ Road traffic injuries can be prevented.
  - ▶ Road safety is no accident.

Events marking the First United Nations Global Road Safety Week took place at local, national, regional and global levels. It was widely recognized, however, that events hosted at local and national levels are most likely to have the greatest impact on moving the road safety agenda forward.

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<sup>1</sup>Annan, 2007

## **14.2 SURVEY ON ROAD TRAFFIC VICTIMS**

A “Survey on Road Traffic Victims” with the emphasis on young road user seeking treatment at the National Hospital of Sri Lanka was started on 29<sup>th</sup> of March 2007 at the Accident and Orthopaedic Service of National Hospital of Sri Lanka and completed at 10.00 p.m. on the 3<sup>rd</sup> of April 2007. The objective was to emphasize the involvement of young road users seeking treatment at the major trauma care centre in Sri Lanka and to study the factors related to road traffic accidents. An interviewer-administered questionnaire was used for the first 200 patients at the Outpatient Department from 8.00 a.m. 29<sup>th</sup> of March 2007.

The study revealed a male preponderance (79.5%) in all aspects of road traffic accidents. The commonest age group affected was 20-35 years and the next group affected was 36 to 50 years. The pedestrians were the commonest group of road users who were involved and the next commonly affected were the motorcyclists. The most vulnerable time of the accidents was 9.00 p.m. to 11.00 p.m. Analysis of data showed that motorcycles were the commonest vehicle involved followed by three-wheelers. Speeding was found to be the commonest cause of motorcycle and motor vehicle accidents. The foot board travellers were the most vulnerable group among the passengers.

The survey also revealed that the young road users, especially males are the most vulnerable group affected by the road traffic accidents. It is clearly a great opportunity to raise the issue of road traffic injuries to a higher level.

## **14.3 MEDIA SEMINAR ON ROAD SAFETY**

It was held at the Auditorium, Health Education Bureau on 26<sup>th</sup> of April 2007 from 9.30a.m. to 12.00 p.m. The Moderator was the Deputy Director of the Health Education Bureau Dr. Kanthi Ariyaratna. Personnel from all media agencies in Sri Lanka were targeted. The occasion was graced by the Honourable Minister of Health care and Nutrition Mr. Nimal Siripala de Silva. There were presentations on ‘Night Road Users’, Rider Safety: Use of Helmets’, ‘Role of Private Bus Owners Association on Road Safety’, ‘Role of National Transport Commission on Road safety’, Road safety enforcement’.

## **14.4 AN EXHIBITION AT THE NHSL**

The exhibition with the theme of “Help Reduce Accidents” was targeted for the general public, school children and hospital staff. It was on 23<sup>rd</sup>, 24<sup>th</sup> and 25<sup>th</sup> of April 2007 from 10.00 a.m. to 2.00 p.m. There were stalls on: Pre-hospital care, Road rules, Rider Safety, Video education programme, First aid, Quiz programme, Display of drawings by school children on “Prevention of road traffic accidents”.

### **14.4.1 PRE-HOSPITAL CARE**

This was organized by the fire brigade Colombo Municipal Council to educate the public on Emergency Ambulance Service \_110. The service has special objectives of its own.

When the centre receives a message they should inform the closest ambulance service and immediately send an ambulance. First aid is given at the site by Paramedics. The victim is transported to the hospital (National Hospital Sri Lanka/ Colombo South Teaching Hospital) in the recovery position and there by reduce the morbidity and mortality. The relevant hospital is informed to get prepared before the patient arrives.



FIGURE 14- 1: THE RESCUE VEHICLE 110

#### 14.4.2 ROAD RULES BY TRAFFIC POLICE HEADQUARTERS



FIGURE 14- 3: EXHIBITION STALL OF THE POLICE DEPARTMENT

The Department of Police has organized a stall with the aim of heightening the public's awareness on road rules and safety. It displayed banners on its services, on road signs and markings. It had posters on road traffic accident prevention. A special drama on using a pedestrian crossing was shown for school children.

#### 14.4.3 USE OF HELMETS



FIGURE 14- 2: DEMONSTRATION ON HELMETS

The objective was to improve rider safety with the use of quality helmets in the proper method. It was organized by the Trauma Secretariat in collaboration with JICA. To educate the public on how to use a helmet properly and how to select a quality helmet, demonstrations were done using different types of helmets purchased from local shops.

#### 14.4.4 FRIENDS OF ACCIDENT SERVICE

This is a group of wealthy people who help the maintenance of the Accident Service and the patients and the staff by supplying necessities and helping in situations with mass casualties.

#### 14.4.5 QUIZ PROGRAMME

Accident Service in collaboration with the Health Education Bureau organized a quiz programme on promoting awareness on road safety for the school children.

#### 14.4.6 OTHER EXHIBITS

##### A. CINEMA

Video presentations provided by the WHO on road safety were displayed.

##### B. FIRST AID

The school children and the medical students were taught on important measures and they were given a chance to practice on dummies.



FIGURE 14- 4: FIRST AID DEMONSTRATION

##### C. CREATION OF A WEBPAGE UNDER OUR WEBSITE

[www.traumaseclanka.gov.lk](http://www.traumaseclanka.gov.lk) - a web page was designed under the trauma secretariat web site.

## **14.5 LOCAL ACTIVITIES AT THE BASE HOSPITAL HORANA**

### **14.5.1 STREET DRAMA**



**FIGURE 14- 5:** DRAMA ON ROAD SAFETY

This drama was produced by hospital staff under the guidance of Dr. Lanthika (Medical Officer Public Health) on the importance of road rules and how they help to prevent road traffic accidents. It was staged at Road Safety Media Seminar, at hospital premises and at Prajapathi Girls School, Horana.

### **14.5.2 SCHOOL EDUCATION PROGRAMME**

This audio-visual session for the children from grade 9 to grade 13 was conducted by health education unit of the hospital at Prajapathi Girls School to introduce the “First UN Global Road Safety Week” and why it was dedicated to “Young Road Users”.

### **14.5.3 ART COMPETITION**

It was carried out for hospital staff on 27<sup>th</sup> of April. The theme was the impact of road traffic accidents, importance of road rules and on the prevention of road traffic accidents.

### **14.5.4 ESSAY AND POEM COMPETITION**

These were organized for the hospital staff on 27<sup>th</sup> of April. And the winners were awarded with certificates.

### **14.5.5 QUIZ PROGRAMME**

This was for the staff members and was on 30<sup>th</sup> of April by health education unit of the hospital. Main objective of this programme was to make aware of road signs and its use. Winning team was awarded with certificates.



#### **14.5.6 PUBLIC AWARENESS PROGRAMME**

This was conducted by Traffic Police Headquarters, Colombo on 26<sup>th</sup> of April at Horana town to educate the public on road rules and prevention of accidents.

## 14.6 LOCAL ACTIVITIES AT THE GENERAL HOSPITAL KALUTARA

These were organized by the director and the staff of the institution and were conducted on the 25<sup>th</sup> of April at the hospital premises.

### 14.6.1 CONFERENCE



FIGURE 14- 6: OBSERVING RELIGIOUS RITES TO COMMENCE THE COMMEMORATION OF THE UN ROAD SAFETY WEEK

Proceedings started at 9.30 am by observing religious rights and holding a minute's silence in remembrance of those who passed away due to road traffic injuries. The welcome speech was delivered by Dr. Waduge, Director, GH Kalutara. Consultant Anaesthetist, Dr. (Mrs.) Ranmalee Kulasiri, the OIC Traffic police, Dr. (Mrs.) Ekanayake, deputy director-GH Kalutara and the matron did presentations on road traffic injuries.

In the end an open discussion was held where the difficulties faced by the drivers were brought up and

suggestions on making the roads safer were solicited from the audience.

### 14.6.2 VEHICLE PARADE

A vehicle parade was organized consisting of three wheelers, school vans, hospital vehicles and other private vehicles. All the vehicles were decorated with the posters and banners provided by the Trauma Secretariat which were designed especially for the Road Safety week.



FIGURE 14- 7: EDUCATING THE PUBLIC DURING THE PARADE

## **14.7 LOCAL ACTIVITIES AT THE COLOMBO SOUTH TEACHING HOSPITAL**

The Director, the Deputy Director, Medical officers, Matron, Nurses and representatives from all the staff participated in the programme.

### **14.7.1 POSTER EXHIBITION**

It was held on the 23<sup>rd</sup> April at the OPD (Out Patient Department) lobby of the hospital. Awards were presented to the winners of the poster competition.

### **14.7.2 SEMINAR ON ROAD SAFETY**

In collaboration with Police station Kohuwala, the seminar was focused for the drivers and the pedestrians. The consultant surgeon Dr. D. Wickramasekera did a presentation to elaborate the importance of the preventive aspects of road accidents.

### **14.7.3 STREET DRAMA**

A drama produced by the hospital staff was displayed on the 25<sup>th</sup> April, for the visitors and the staff of the hospital.



**FIGURE 14- 8:** STREET DRAMA ON ROAD SAFETY

### **14.7.4 TRAFFIC DEMONSTRATION**

This was done for the school children of Buddhagosha Maha Vidyalaya to improve awareness on the road rules and road safety by Traffic Police Headquarters on the 26<sup>th</sup> April.

Chapter 15

# TRAUMA SURVEILLANCE IN PILOT HOSPITALS

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## Key Messages

- ▶ Injuries despite being easily preventable are the leading cause of hospital admissions.
- ▶ The Trauma Surveillance Record (TSR) was the initial step introduced in evaluating the trauma surveillance system.
- ▶ Colombo South Teaching Hospital, General Hospital Kalutara and Base Hospital Horana are the pilot hospitals of TSR programme.



## 15.1 BACKGROUND

This chapter is on the development of the injury surveillance system in four pilot hospitals, namely General Hospital Kalutara, Base Hospital Panadura, Base Hospital Horana and Colombo South Teaching Hospital. The Trauma Surveillance Record, manual of operations and the software designed were of great importance to improve the quality of the project.

The MoH identified the surveillance of trauma and other injuries as one of the top priorities in the development of trauma system in Sri Lanka because injuries, despite being easily preventable, are the leading causes of hospital admissions. Moreover they often affect the active population. The current health information system does not identify the gravity of injuries; it cannot be used to paint the correct picture<sup>1</sup>.

Examples of the challenges related to the information system are as follows: poor recording of essential information at the time of data collection (e.g. in RTA victim, road user, type of accident etc.); external cause coding and multiple condition coding are not practiced in Sri Lanka; data collected at the first contact are not compiled properly; incomplete diagnosis statements; and writing abbreviations as diagnoses e.g. LAMA (Left Against Medical Advice).

As part of the EBM Study, the Ministry of Healthcare and Nutrition and the JICA EBM Study organised two workshops to support the development of a trauma surveillance system. The objectives of the workshop in July 2006 included the development of a case definition and a minimum data set for trauma surveillance in 5 pilot hospitals, namely, Colombo South Teaching Hospital, Kalutara General Hospital, Panadura Base Hospital, Horana Base Hospital, and National Hospital of Sri Lanka- Accident and Orthopaedic Services. The other objective was to arrive at a consensus on the major implementation issues related to trauma surveillance. The Regional Advisor from the WHO/ SEARO on Disability, Injury prevention and Rehabilitation, Dr. Chamaiparn Santikarn, was the key resource person. She described the experience of Thailand in setting up an injury surveillance system.

The “*Workshop on Networking for Trauma Surveillance*”, held in August 2006 at the Auditorium of the Medical Research Institute, was attended by officials from the Ministry of Healthcare and Nutrition who were involved in policy formulating and implementation, donor agencies, and other relevant ministries and organizations. Its five objectives were:

- ▶ To have a dialogue to develop the network of trauma surveillance between different stakeholders;
- ▶ To discuss concerns and feasible actions that will enhance the sharing of quality information on injuries;
- ▶ To identify and recommend solutions for gaps and duplications in the proposed system;
- ▶ To recommend methods of maintaining quality of data in the proposed system; and
- ▶ To identify methods of data sharing in the proposed system.

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<sup>1</sup>Senanayake, 2005

### **15.1.1 GAPS AND DUPLICATIONS**

Gaps in the existing system of injury information include the data on: condition of the vehicle, specific information on other types of injuries, educational level of victim/driver, class of the vehicle, condition of the road, mode of transportation of the victim, and time of examination of the victim. It is necessary to include intentional injuries as well. However at present the main focus is on unintentional injuries. In the proposed networking system, statistics on crimes and narcotics related injuries should be included. Moreover, there is a need to get the information on insurance. The government medical institutions provide medical care for free and the injured get the benefit from insurance schemes without any revenue to the government to recover the cost of medical care.

To overcome these information gaps, there is a need to appoint a focal point as well as to introduce a sharing mechanism, a reporting system and a regular review process. The formulation of a minimum set of information should include other types of injuries and a separate section for circumstances leading to different types of injuries (e.g. poisoning, snake bite, home accidents).

Appropriate agencies will be responsible for addressing these information gaps. The Department of Motor Traffic will be the leading agency for data on the condition of the vehicle; the police/hospital will be for the educational level of victim/driver; the police alone for the class of the vehicle and the road condition; the hospital alone for the mode of transport of the victim and the time of examination of the victim. A focal point will be appointed for the specific information on other types of injuries.

The duplication of data by the police and hospital is acceptable. In the future, to prevent duplications it would be better to institute a system for reporting and sharing of information. A focal point will be responsible for addressing issues on duplication.

### **15.1.2 NEED TO ENHANCE DATA QUALITY**

Maintaining the data quality can be achieved at various stages of the data flow. During data collection, the practical difficulties of the Medical Officer who fills up all the data should be considered. It is better to delegate this task to separate officers. For this purpose there will be mainly 3 categories of people; nurse, doctor and medical record officer who will record specific details at different stages. If possible, the trauma victim or the person accompanying or transporting him/her could be the one to fill up the form. Ideally, data should be verified from available documents or from bystander. Data that are common among various agencies, for example name and age, could be collected by maintaining a certain degree of uniformity.

Needless to say, proper supervision will be required to maintain data quality. When recording data, supervision must ensure that abbreviations are not used and recording is complete. If recording is incomplete, then the records should be returned as soon as possible. There should be a training programme so that all data recorders are skilled and kept abreast on their responsibilities.

The persons responsible for data analysis should be trained also for assessment of data quality. Hence, they should be able to identify anomalies in the data and develop mechanisms to rectify them; they should analyse the data needed for action; they should verify their own data with those of other agencies.

Under-reporting seriously affects the data quality. Hence, this should be monitored and reported. There should be a person authorized to disseminate data. It would be advantageous if a data sharing mechanism is in place to cater to the specific needs of data users.

There must also be consistent attempts at generating information on a timely manner. Every step of the information cycle must be time bounded. The constraints in maintaining data quality are the difficulties in conducting a proper supervision as well as the lack of interest in the information system, of training, and of staff and logistics. The present Indoor Morbidity and Mortality Return (IMMR) system is not operating properly. On top of it, if the trauma surveillance system is also entrusted to the existing staff this system too will fail. To overcome this, a batch of graduates is being trained to handle this task up to the District Hospital level. In addition, an awareness programme could be launched using the principles of Behaviour Change Communication or BCC. A Performance-based appraisal/appreciation system could be initiated once responsibilities are clearly defined, facilities and logistics are provided, and staff is trained. This system would lessen the incidence of non-compliance and poor work output seen in the present system.

A data manager should be identified at different levels. Responsible persons at different levels should be identified for setting the standards and maintaining quality. There should be a central agency to set up standards and maintain quality as well.

### 15.1.3 FACILITATING THE SHARING OF DATA

Trauma surveillance is the concern of several sectors. Therefore it is essential that a data sharing system is developed connecting all sectors.

The information gathered should be shared with different sectors efficiently. For example if information about the place of road traffic accident (RTA) is given to the Road Development Authority, it will be possible for this agency to take remedial actions for any defects in the road system that contributes to RTA.

Patient identification and type of injury are data that should be shared on a quarterly basis. Two examples of sharing mechanisms are e-mailing and quarterly review meeting. Different agencies have different needs therefore some duplication will take place.

Although there is overwhelming consensus on the need for data sharing, the constraints in carrying these out have to be overcome. The lack of vision, strategy and commitment (from the administrators and the

#### Agencies that need injury data:

- ▶ Ministry of Healthcare and Nutrition
- ▶ Police
- ▶ Road Development Authority
- ▶ Department of Labour
- ▶ Ministry of Sport
- ▶ Ministry of Child Development
- ▶ National Dangerous Drugs Authority
- ▶ Department of Agriculture
- ▶ Media Department
- ▶ Department of Education



politicians) have to be addressed so that there will be financial support to start, scale up and sustain and system of data sharing. It is very important to decide who will own this system and how budgetary allocations are obtained. If not, the proposed system will not sustain once the donor agencies leave and no financial allocations are available. The Ministry of Healthcare and Nutrition will be in the position to serve as the coordinator. At present, the compliance from the private sector is very poor. Therefore, there should be a law compelling the private sector also to follow.

## 15.2 OBJECTIVE

By the end of the pilot implementation, it is envisioned that a database on causes of injuries and outcomes from injuries is established and that the evidence is used for the following:

- ▶ Injury prevention and safety promotion;
- ▶ Clinical quality improvement;
- ▶ Policy development;
- ▶ Training development;
- ▶ Research; and
- ▶ Trauma system development.

With the development of a proper trauma surveillance system in hospitals, patients will directly benefit as:

- ▶ Medical staff will be aware about the different categories of injuries and well trained to manage them;
- ▶ They will be given information on simple methods of trauma prevention and can therefore avoid major harm to the health status;
- ▶ They will get the best care at the hospitals because the resource allocation will be more appropriate; and
- ▶ The overall quality of care and the quality of life will be enhanced.

## 15.3 METHODOLOGY

### 15.3.1 PILOT HOSPITALS

The Trauma Surveillance Record (TSR) was first introduced to the four pilot hospitals, Colombo South Teaching Hospital, Base Hospital Horana, Base Hospital Panadura and General Hospital Kalutara in November 2006 in order to evaluate the trauma surveillance system. Many interventions were done to make this a success.

TABLE 15- 1: PILOT HOSPITALS<sup>1</sup>

Institution	Type	Number of Beds	Specialties	District
Kalubowila	TH	1126	Tertiary care Hospital, 10 specialties	Colombo
Horana	BH	412	10 specialties	Kautara
Panadura	BH	272	8 specialties	Kautara
Kalutara	GH	757	17 specialties	Kautara

<sup>1</sup>Medical Record Units of the relevant Hospitals

TABLE 15- 2: BASIC INFORMATION ABOUT THE PILOT HOSPITALS

	<b>CSTH</b>	<b>Kalutara GH</b>	<b>Horana BH</b>	<b>Panadura BH</b>
<b>No. of wards</b>	34	24	12	8
<b>No. of Beds</b>	1094	757	412	272
<b>In-Patient (Average per day)</b>	375	257	350	200
<b>Bed Occupancy</b>	91%	93.44%	80-100%	75%
<b>Out Patients per day</b>	2000	922	600	825
<b>Births per year (2006)</b>	9887	9538	3000-3500	-
<b>Deaths per year (2006)</b>	1340	1641	100-140	399
<b>Maternal Deaths (2006)</b>	8	Nil	Nil	-

#### A. COLOMBO SOUTH TEACHING HOSPITAL (CSTH)

Colombo South Teaching Hospital is situated amidst a densely populated highly commercialized area in the electorate of Dehiwala-Mount Lavinia. This hospital provides patient care services and teaching services to undergraduates of Sri Jayawardenapura University and postgraduates attached to the University of Colombo. Being upgraded to level of a teaching Hospital, it provides the facilities for basic as well as several minor specialties other than cardiothoracic surgery and neurosurgery. The Out Patient Department (OPD) is providing the services to 2300 patients per day. The usual admissions are around 400 patients per day with average clinic attendance of around 1500 per day. The major specialties of Surgical, Medical, Maternal and Child Healthcare units also cater to numerous patients. Other units also work efficiently as in patient care services:

- ▶ Eye and ENT units
- ▶ Blood bank services
- ▶ Judicial Medical Services
- ▶ Accident Service
- ▶ Psychiatry unit
- ▶ Genitourinary unit
- ▶ Gastroenterology unit
- ▶ Renal dialysis unit
- ▶ Dermatology department

The special care units are: Emergency Treatment Unit (ETU), Special Baby Care Unit, Surgical and Medical Intensive Care Units. Apart from that they have departments of Radiology and Pathology.

The Department of Radiology is involved in medical imaging, invasive diagnostic and therapeutic procedures, digital fluoroscopic investigations, CT scanning, US scanning and mammography (2006). The Pathology laboratory has sections for microbiology, chemical pathology and histopathology.

Medical, Surgical, Gynaecological, Antenatal, Paediatric and other specialties mentioned and the OPD clinics (Hypertension, Diabetic, Asthma, Tuberculosis, and Adolescent Health) are there for patient care. Patient Records Unit, Information Unit, Food provision unit, Surgical and General stores and the Central Sterility and Supplies division are also included in the infra structure.

## B. GENERAL HOSPITAL KALUTARA

General Hospital (GH) Kalutara is the premier hospital in the Kalutara district. It was established in 14<sup>th</sup> November 1951 and was opened by the Rt. Hon. D. S. Senanayake, PC Prime Minister and Minister of Health, as a base hospital. It is situated approximately 1 ½ miles from the Kalutara town and is the main hospital between Teaching Hospital (TH) Karapitiya and the TH Kalubowila. The extent of the hospital is about 22 acres.

The hospital was under the administrative control of the Deputy Director General of Health Services (MS) and supervised by the director of National Institute of Health Sciences up to 01/03/2001. Since then it has been under a Director. Since 01/03/02 the following medical institutions were incorporated under the GH Kalutara,

- ▶ PU Beruwala
- ▶ RH Aluthgama
- ▶ RH Althgamaweediya/Dhargatown

GH Kalutara has a capacity of 757 beds and provides specialist services in addition to providing indoor and outdoor patient care.

The hospital at present provides services under the following specialties. They are mainly Gynaecology, Medicine, Surgery, Paediatrics, ENT, Eye, Rheumatology, Dermatology, and Psychiatry sections as well as PBU, ICU and Lab services. Apart from the main facilities, regular in service training programmes are carried out to ensure total quality care for patients. There are training programmes for nurses on theatre and ICU, training of trainers programmes for infection control unit and on building positive attitudes and thinking for success. The Health Education Unit is an integral part of GH Kalutara and plays a pivotal role in Total Quality Care of patients.

## C. BASE HOSPITAL HORANA

Base Hospital Horana in Kalutara district is situated towards the country compared to the other hospitals in the district (General Hospital Kalutara and Base Hospital Panadura). This hospital is in the Western province and is administered by the RDHS office Kalutara. Base Hospital Horana caters for 7 out of 9 MOH areas in Kalutara district: Bulathsinghala, Madurawela, Wallalawita, Ingirirya, Agalawatta, Horana and Bandaragama.

It is situated 1 km away from the Horana town off Horana – Matugama road. This hospital is administered by the Medical Superintendent Dr. Asela Gunawardane and the staff includes 97 medical officers, 186 nursing officers and 45 attendants. In addition to that they have

pharmacists, midwives, lab technicians, physiotherapists, speech therapists, microscopists, ECG technicians and radiographers.

There are 422 beds. The hospital also consists of an administrative department, 2 medical wards, 2 surgical wards, an obstetric and gynaecology ward, a paediatric ward, an out-patient department (OPD), an intensive care unit (ICU) and a preliminary care unit (PCU). The PCU is a well structured and a well functioning unit. It is playing an important role in significantly reducing unnecessary admissions to the hospital. The hospital is conducting medical, surgical, paediatric, maternity, Ear, Nose and Throat, dermatology, psychiatric, antenatal, well baby, family planning, gynaecology, diabetic, epileptic, TB, eye, and dental clinics. The health education unit established at the hospital provides services to the patients and the public. They conduct education programmes and awareness programmes at clinics, schools, offices and in the community. A Quality management unit was established to improve the quality of services and care provided by the hospital.

#### D. BASE HOSPITAL PANADURA

Base Hospital Panadura is situated close to the shore at Panadura town facing Galle road. This hospital is in the Western Province and is administered by RDHS office Kalutara. Base Hospital Panadura caters for following MOH areas:

- ▶ Bandaragama
- ▶ Panadura
- ▶ Kalutara
- ▶ Moratuwa

This hospital is administered by the medical superintendent Dr. W.D.S.



FIGURE 15- 1: BASE HOSPITAL PANADURA

Siriwardhane. The staff includes 96 medical officers (including 10 consultants), 108 nursing officers and 42 attendants. In addition to that they have pharmacists, lab technicians, physiotherapists, microscopists, ECG technicians and radiographers.

Base Hospital Panadura has 272 beds and bed occupancy rate is 75%. Around 825 patients are getting treatment from the OPD (out patient department) daily. In average 400 deaths per year occur in this hospital.

Base Hospital Panadura consists of an administrative department, 2 medical wards, 2 surgical wards, a paediatric ward, out patient department (OPD), intensive care unit (ICU) and an emergency treatment unit (ETU). The ETU is a small unit with 2 beds and is functioning from 7.00a.m to 7.00p.m.

The hospital conducts medical, surgical, paediatric, cardiology, E.N.T. (Ear, Nose and Throat), dermatology, psychiatric, STD (sexually transmitted diseases), diabetic, asthma, hypertension, TB, eye, and

dental clinics. The health education unit established in the hospital is providing a good service to the patients as well as the public. They are conducting education programmes and awareness programme at clinics, schools, offices and the community. A Quality Management Unit was established to improve the quality of services and care provided by the hospital.

### 15.3.2 BASIC SYSTEM DESIGN

#### A. CASE DEFINITION

The original case definition was: All patients with acute injuries from non-iatrogenic causes who are admitted as indoor patients within 7 days of the date of injury or who are dead on arrival at the hospital due to acute injuries.

The revised case definition is: All patients with acute injuries from non-iatrogenic causes who are admitted as indoor patients within 48 hours of the time of injury or who are dead on arrival at the hospital due to acute injuries and all patients transferred to the participating hospital for care of acute injuries

#### B. COLLECTION OF THE MINIMUM DATA SET

The initial TSR form was in two pages and considering the suggestions from the staff of the hospitals it was edited to a single page. The minimum number of relevant data was utilized for the final version of the document. It was designed as an attractive, time saving and easily understandable document that can be filled by any person with no special training.

The TSR contains two parts which has to be filled by a nurse and a medical officer separately. The parts to be filled by the nurse are the:

- ▶ Demographic data of the patient (Bed head ticket number, age, sex and the occupation); and
- ▶ Description of the injury (Time, cause, site of injury and details on the transportation).

The medical officer has to fill the following contents:

- ▶ Severity and type of injury;
- ▶ Vital signs (Blood pressure, Respiratory rate, Pulse rate and the Glasgow Coma Scale);
- ▶ Final diagnosis; and
- ▶ Disposition/ outcome.

Most of the options are printed in the form and only a few has to be entered manually. Once the person is familiar with the form to complete one form will take only a few minutes.

### 15.3.3 FLOWCHART OF THE TRAUMA SURVEILLANCE SYSTEM

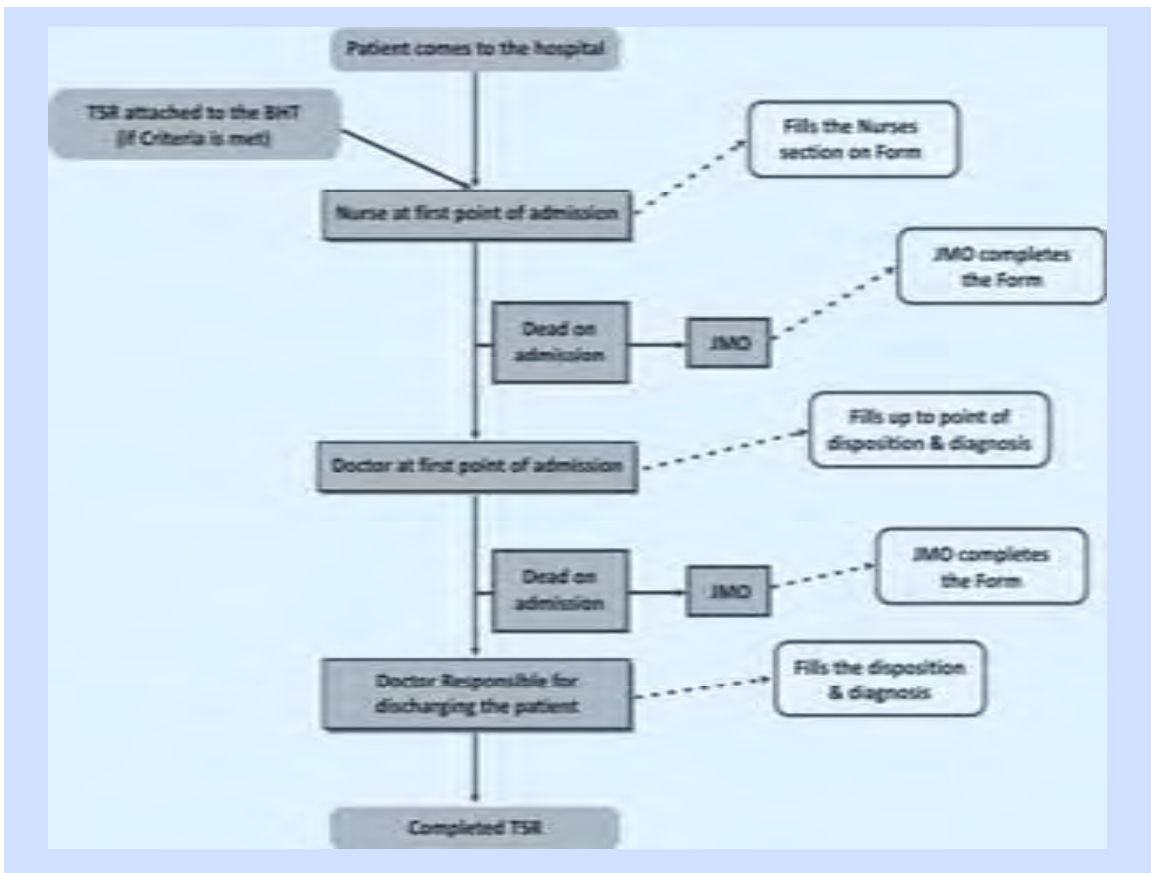


FIGURE 15- 2: TRAUMA SURVEILLANCE FLOWCHART

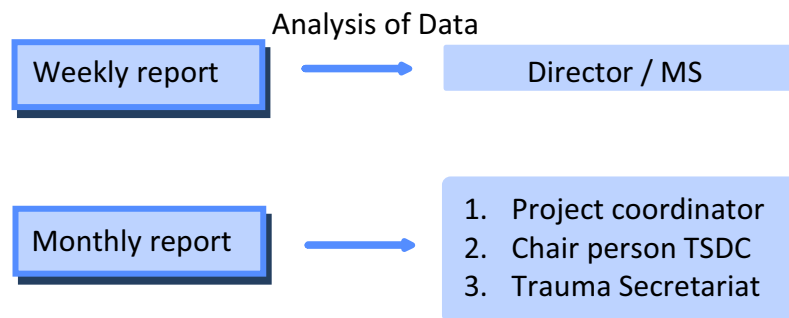
#### A. CLASSIFICATION, CODING AND COMPILATION

Until recently, there was no standard coding system that was used in Sri Lanka to classify diseases or conditions. The Trauma Surveillance Record adopts the International Classification of Diseases-10.

The Medical Records Officer or the data entry operator is responsible for coding and entering data. Regarding data compilation at the institutional level, the key person is the Medical Records Officer under the supervision of the Head of the Institution and Consultant in charge. The other supervisors for data compilation would be the Regional Epidemiologist/ and Medical Officer (MO) Planning at the districts as well as the Information Unit and Epidemiology unit at the national level.

#### B. DATA PROCESSING AND ANALYSIS

The completed forms are sent to the Medical Records Department after a patient is discharged. Data entry operators enter relevant data to the Trauma Surveillance database. A copy of hospital database is sent to the national database. A computer software was designed to facilitate data processing and analysis at the institutional and national levels.



### c. REPORTING AND DISSEMINATION OF RESULTS

Periodical reports will be generated once the data entry is completed at the institutional and national levels. The reports generated at the institutional level will be integrated into a final report at the Ministry. Monthly monitoring will be conducted by the Ministry of Healthcare and Nutrition.

It is envisioned that the reporting and dissemination will be the responsibility of the Head of the institution with the assistance of the Consultant in charge at the institutional level, Regional Epidemiologist or MO Planning at the district level, and Epidemiology Unit and Information Unit of the Ministry of Healthcare and Nutrition at the national level. Reports will be targeted initially to the health sector. Subsequently, summary reports will be developed and disseminated to other relevant sectors.

### d. ORGANIZATIONAL SUPPORT AND SUSTAINABILITY

The Trauma Secretariat performs coordination and supervisory functions over the Trauma Surveillance. They also provide technical support to:

- ▶ Epidemiology Unit;
- ▶ Health Information Unit; and
- ▶ Medical Statistical Unit.

The Trauma Surveillance System was designed so that it will require minimal human resources and financial inputs to promote sustainability. In fact, the basic assumption is that the activities related to the surveillance will be done using existing resources as much as possible. Internal circulars were distributed at General Hospital Kalutara and Base Hospital Horana. Then again a circular from the Ministry of Healthcare and Nutrition was sent to all four hospitals to make the hospital staff aware about the involvement of the Ministry on upgrading the trauma surveillance system in Sri Lanka. It stated the necessity of the sustainability of the system and the need to enhance the active involvement of the medical staff in the procedure.



## E. QUALITY CONTROL OF DATA

Firstly an introduction programme was conducted by the Trauma Secretariat, Representatives of AmeriCares and JICA, and the Research Assistant allocated to the hospital. It was participated by all the relevant parties (e.g. the Director, Deputy Director, Matron, Representatives of doctors and nurses, etc.). It included the following topics:

- ▶ Significance of injuries on the healthcare system and on the lifestyle of Sri Lankans; the urgent necessity for surveillance and appropriate interventions;
- ▶ Objectives of the TSR programme;
- ▶ Instructions to fill the TSR; and
- ▶ Future of the TSR programme.

Forums were held to evaluate and revise the surveillance instrument and process. Another programme was organised to train the participants on the revised Trauma Surveillance Record.

As part of the design, the Medical Records Officers of pilot hospitals will conduct quality audits by comparing data form with information in patient record. The representative of the Ministry of Health will carry out additional periodic quality audits.



FIGURE 15- 3: AWARENESS PROGRAMME ON THE TRAUMA SURVEILLANCE SYSTEM

## F. MONITORING AND EVALUATION

The revised Trauma Surveillance Record and processes were pilot-tested. To assess the surveillance system, a mechanism using the WHO guideline was adopted. The evaluation process was initiated in three aspects - Process evaluation, system environment evaluation and retrospective evaluation. Focus group meetings were held on the 24<sup>th</sup> of May, 2007.

### 15.3.4 HOSPITAL-SPECIFIC INNOVATIONS

#### A. CSTH

There was a plan to build a new resuscitation room and repair the accident ward of the hospital. The hospital staff agreed to recruit 2 nurses to attend to the TSR. Since then several discussions on the shortcomings and the progression were held.

For the sustainability of the project Dr. Lionel Jayarathna, Deputy Director, Colombo South Teaching Hospital has assigned nurses to complete the TSR and a nurse and a medical research officer was trained to enter the data. The data was entered to the database since 1<sup>st</sup> of May, 2007.

At the moment the project is successfully functioning and the new consultant surgeon of the accident service is very keen on making the trauma surveillance system a success. By the end of May, 2007 the evaluation process was carried out.

#### B. GH KALUTARA

A flow chart was designed for GH Kalutara showing the flow of the TSR. This will give anyone who is not familiar with the programme, an idea about it. Frequent discussions were held with the doctors and the nurses involved in the filling of the TSR, both individually and as groups to identify the difficulties faced by them and to get their suggestions in order to make it more user-friendly and practical. An internal circular was drafted and distributed by the director emphasizing on the importance of completing the TSR.

The revised TSR was reintroduced to the hospital in March 2007. There it was decided to allocate two separate nurses to complete all the TSRs. This was as a result of the continuous objections by the doctors regarding this matter, especially in times of mass casualty. Software to enter the data was installed to the hospital computer. The nurses were trained how to enter the data and to generate reports.

A separate room was allocated for the Trauma Surveillance Programme where two nurses work to complete the TSRs. They were authorised to complete the doctors' part as well. Data entry is also done by them. Despite restraints in time and physical and human resources they have managed to continue this programme in a satisfactory level.

#### C. BH HORANA

Members of the staff who were involved in Trauma Surveillance programme were educated individually on objectives and the importance of the programme.

A leaflet was prepared and distributed that contains the roles of the staff (**Figure 15-4**). Also, a wall poster was developed and displayed at PCU, OPD and the surgical wards.

Internal circular was developed and copies of the document were distributed to each member of the staff involved in the programme.

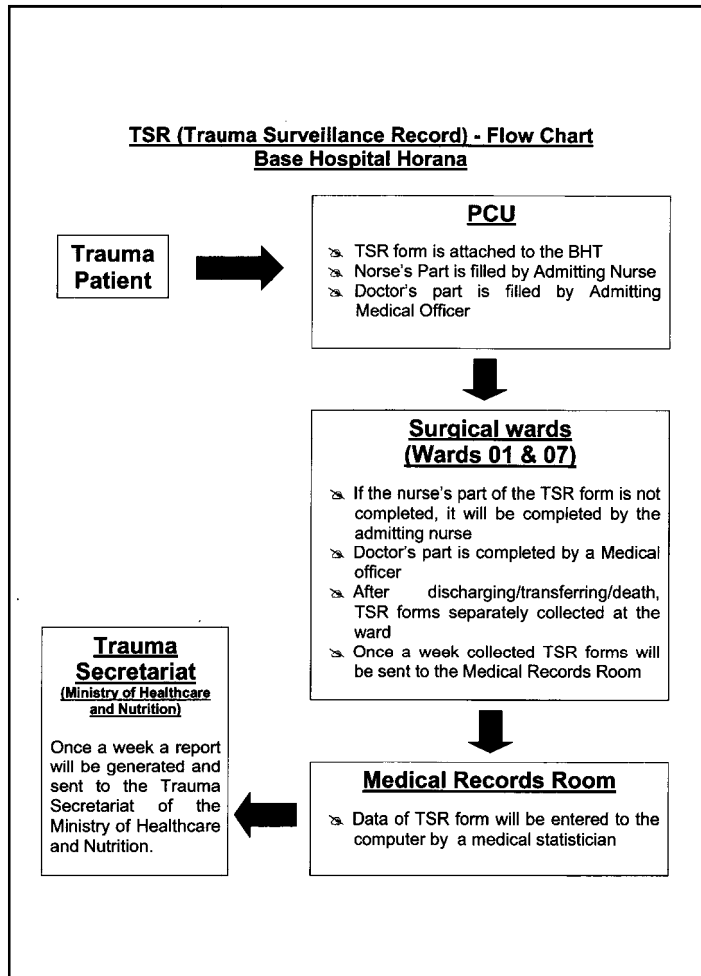


FIGURE 15- 4: FLOWCHART IN BH HORANA

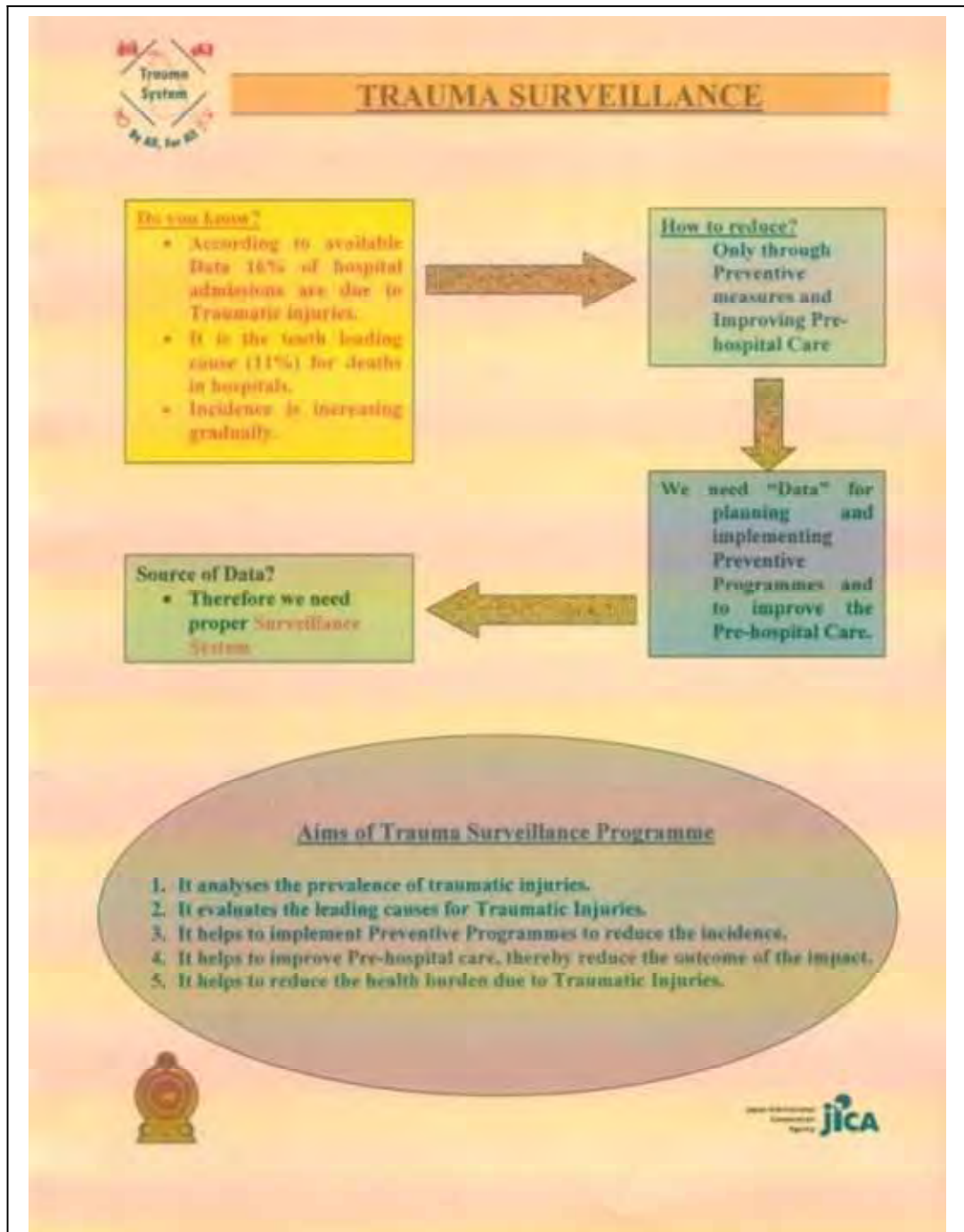


FIGURE 15- 5: POSTER ON TRAUMA SURVEILLANCE

## 15.4 RESULTS OF REVIEW

### 15.4.1 MANUAL OF OPERATIONS

A manual for the data collection form was developed. This manual is used to assist those who would be completing the form in the hospitals by providing background information on the project and to answer frequently asked questions pertaining to the data collection tool.

Comprehensive guidelines are given on each section of the Trauma Surveillance Record and therefore the person who records data has no difficulty in filling the form after going through the manual. Every attention is given to make the data recording an easy and time saving task to facilitate the sustainability of the project.

Firstly the most important guideline about a case definition is described clearly. The inclusion and the exclusion criteria are readily defined. The focus is given to the following sections in detail:

- ▶ Reporting Criteria and Guidelines for Data Collectors
- ▶ Variables for Data Collection
- ▶ Data Collection Methodology
- ▶ Data Coding, Editing and Transfer
- ▶ Data Analysis and Usage
- ▶ Quality Control of Trauma Surveillance Report Data
- ▶ Detailed Description of TSR Variables in Nurse's Section
- ▶ Detailed Description of TSR Variables in Doctor's Section

### 15.4.2 SOFTWARE

Necessary training was given to the hospital staff regarding the technical aspects for the utilization of the software. Software was designed to enter the collected data of the Trauma Surveillance Record (TSR). Using the software the data can be entered in each hospital separately. The software was introduced to hospitals at different stages and with their suggestions the final version was developed. The hospital staff found the software to be user- friendly. They also came up with the idea that this software can be modified to enter other records in the hospital.

The software was developed to be compatible with the TSR form. It has five views that correspond to each part of the TSR form. With practice, data entering will eventually require only less than five minutes. Some of the facilities in the software are:

- ▶ Data entry is automatically corrected. The date of injury and the date of admission as well as the date of discharge and the date of death should be compatible with each other.
- ▶ Once parts of the data are missing in one page it will be notified automatically.
- ▶ Some of the options can be activated only if relevant and otherwise it will be inactivated.
- ▶ Predefined maximum and minimum values are set for vital signs.
- ▶ Revised Trauma Scale is automatically calculated once vital signs are entered.

- ▶ When the data entry is completed the data is saved in the database automatically.
- ▶ Reports can be generated automatically. There are 30 reports that can be selected in the software where the reports are displayed with the graphs, topic and the duration relevant to data.

With the software reports can be generated according to the individual needs of the hospital and the monthly reports should be produced to the Ministry of Healthcare and Nutrition as instructed.

### **15.4.3 COMPLETENESS**

Midterm evaluation of the pilot project was done using special WHO evaluation method and Focus Group Discussions. According to the WHO method 41% from Kalubowila, 12% from Horana and 47% from Kalutara participated in the evaluation. The process evaluation revealed that Trauma Surveillance Records were completed only in 35.29% in all the hospitals. When considering separate data 29% in Kalutara and 52% in Kalubowila were completely filled while none were completed in Horana. In most of the cases occupation and the location of the injury were not filled by nurses. Some of the cases lacked the previous admission, BHT no, age, sex, timing, place of injury etc. In the doctors section 33% lack the severity of the injury. Diagnosis (6%), outcome/deposition (9%), type of injury and respiratory rate (3%) are not filled.

### **15.4.4 DATA UTILISATION**

The local utilization of data should be enhanced. It can be used for resource allocation (physical and human), prioritize funding, establish efficient preventive measures and planning long term and short term programmes. By identifying the patterns of injuries specific to the hospitals emergency medical staff can be prepared efficiently for management of casualties. With this data health education can be given using the public addressing system in some hospitals. This data can be helpful for the medical personnel in postgraduate education. At the national level this records will reflect the need for improving the quality of training in trauma and disaster management. Health education and planning injury prevention programmes island-wide will be enhanced by the used of this data. It will be important evidence for law enforcement and new legislation preparation for accident prevention. Comprehensive and accurate data will be useful for research purposes as well.

### **15.4.5 OTHER RESULTS**

The retrospective evaluation showed a predictive value of 1 for the trauma surveillance system in Horana and Kalubowila. But the predictive value for Kalutara was 0.76%. The Focus Group Discussions revealed the fact that the staff is well aware about the necessity of the surveillance system and that they are willing to carry out the programme in future. The need of continuous education and training about the programme, the importance of rewarding the people involved, the need of reorienting every intern

batch for the sustainability of the project, the need to design a completed sample TSR form and display in each ward were highlighted. Regular feedback to respective hospitals should be given to update the staff.

Chapter 16

# EMERGENCY TREATMENT UNIT: AN EXPLORATORY REVIEW

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## Key Messages

- An Emergency Treatment Unit (ETU) is a specialized unit in a hospital designed to handle trauma and other types of injuries; unfortunately, not many hospitals in Sri Lanka have this facility.
- A descriptive cross sectional study using self-administered questionnaires was done to assess the available physical and human resources and their quality in the ETUs in the country.





An exploratory survey of Emergency Treatment Units was carried out that focused on the available physical and human resources as well as on the knowledge and opinion of the staff. The results of the survey are described in great detail in the sixth chapter.

## **16.1 INTRODUCTION**

### **16.1.1 BACKGROUND**

Injuries have been the No.1 cause of hospital admissions in Sri Lanka since 1995 accounting to approximately 1 out of 6 admissions. Also 1 out of 9 deaths occurring in government hospitals are due to injuries. However facilities for management of trauma in Sri Lanka are still at a very primitive level. In healthcare institutions of more developed countries there are specialized units to handle injuries. They are called Emergency Treatment Units (ETU), or Emergency Rooms (ER). In Sri Lanka at the moment there are no such highly equipped units apart from very few in hospitals in Colombo. We must not forget that Sri Lanka cannot afford to have units to manage only Trauma Patients Island wide. Therefore it is a good idea to have ETUs to care of both trauma victims as well as to manage medical emergencies. Since most of our peripheral units are still not adequately supplied with necessary medications and infrastructure it is now time to develop necessary criteria which lead to efficient and cost effective management of patients. Therefore we understood that identification of facilities at units controlled by provincial council will give us the baseline of the infrastructure available for those units. Since this is a somewhat special unit we thought that doctors and nurses need continuous medical education to maintain such a unit. For that we assessed the knowledge regarding the emergency management of patients. At the same time we tried to identify whether this ETU concept is good and adaptable for SL; therefore we assessed the attitudes of the doctors and nurses.

For maintenance of a unit we need to identify all necessary baseline equipments, drugs, infrastructure and human resources. If we could identify those areas we could develop/amend necessary policies, rules and regulations accordingly. We also want to find out whether maintaining of an ETU will save lives or not. Therefore we have sent this special document which will include data regarding the admissions as well as deaths at the ETU. By understanding the geographical locations of the ETUs we can also identify the necessary areas which will be needed for development of ETU s. Establishment of such units with adequate facilities is believed to benefit the patients immensely. Therefore the Trauma Secretariat of the Ministry of Healthcare and Nutrition in collaboration with the JICA EBM study team has decided to carry out a study to identify the level of emergency care in the country.

### 16.1.2 OBJECTIVES

#### ● General objectives

- ▶ To study the Trauma care facilities in hospitals under the local governments of Sri Lanka

#### ● Specific objectives

- ▶ To identify the number of Emergency Treatment Units (ETU) in Sri Lanka
- ▶ To assess the physical resources in the ETUs
- ▶ To assess the human resources available in the ETUs
- ▶ To assess the knowledge of doctors and nurses attached to the ETU regarding emergency management
- ▶ To identify the opinion and attitude of the nurses and doctors attached to the ETUs regarding the unit

### 16.1.3 METHODOLOGY

A self-administered questionnaire was used for this descriptive cross-sectional study. The questionnaire consisted of six parts:

1. To assess the physical and human resources in the ETU;
2. To assess the opinions and attitudes of doctors regarding the unit;
3. To assess the knowledge of doctors in emergency management of patients;
4. To assess the opinions and attitudes of nurses regarding the unit;
5. To assess the knowledge of nurses attached to the unit regarding emergency patient management; and
6. Statistical data regarding the unit and the institutions.

The institutions which have ETUs were identified by the data provided by the 26 RDHSs. A questionnaire was sent to each of the nominated institutions with instructions for filling.

Part 1 is to be filled by the nursing officer or the sister in charge of the ETU.

Parts 2 and 3 are to be filled by a maximum of 2 randomly selected medical officers. The two should be from 2 different grades.

Parts 4 and 5 are to be filled by 2 nurses who have spent the most number of years in the unit. This is because the ones who have spent the most number of years are expected to have a better idea about the unit and the services provided by it.

## 16.2 RESOURCES AVAILABLE

From the hospitals with ETUs that have responded to the study 2(5.4%) are General hospitals, 6(16.2%) are Base hospitals, 20(54%) are District hospitals, 2(5.4%) are Rural hospitals and 6(6.2%) are Peripheral units (**Figure 16-1**). However this does not indicate the distribution of ETUs in different levels of hospitals in the country, as this only shows those that have responded to the study.

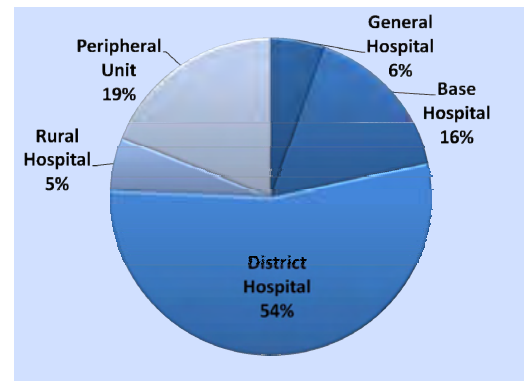


FIGURE 16- 1: ETU SURVEY RESPONDENTS BY CATEGORIES OF HOSPITALS

All the units in the general (2) and peripheral hospitals (5) are working 24 hrs a day. From the 6 units in the base hospitals only 4 (66.7%) work 24 hours. District hospitals provide a 24 hr service in 76.5% (13) of the units and 50% (1) of the units in the rural hospitals also do the same. In total only 78.1% (25) of ETUs in the hospitals in the study currently provide a 24 hour service.

### 16.2.1 AVAILABLE HUMAN RESOURCES

There is a doctor in charge of the ETU in 51% (18) of them while in those without a Medical Officer, there is either a Sister or a Nursing Officer in charge.

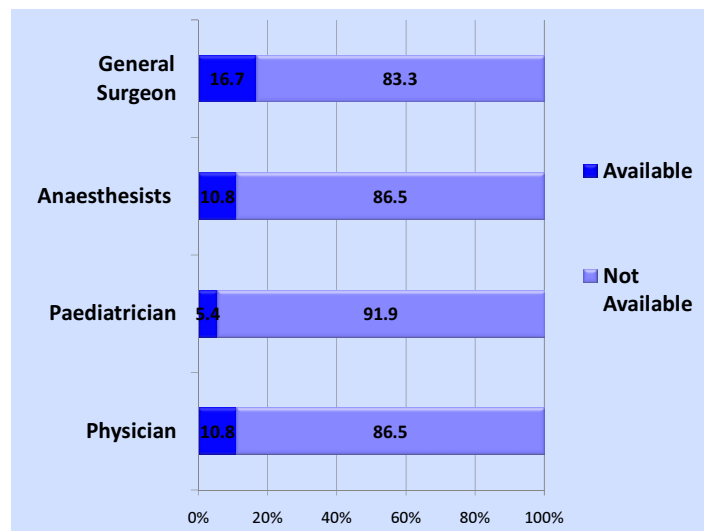


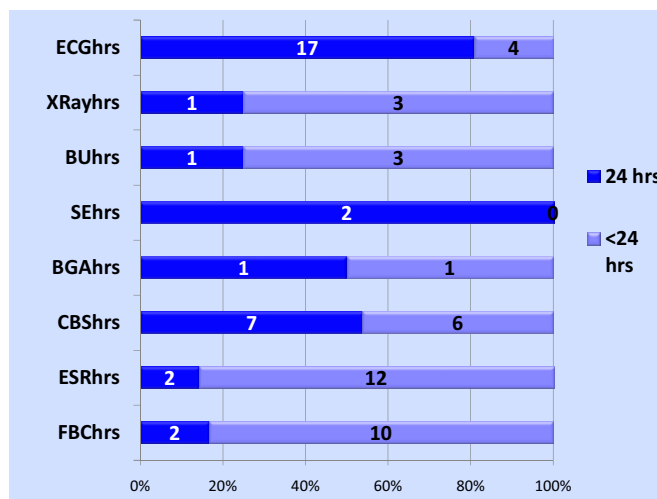
FIGURE 16- 2: AVAILABILITY OF SPECIALIST DOCTORS

Majority of the ETUs do not have the services of a consultant (**Figure 16-2**). General Surgeons are available only in 16.7% of ETUs. Anaesthetists and Physicians are available only in 10.8% whereas Paediatricians are available in only 5.4%. A general Surgeon is available in all General hospitals that participated in the study and in 67% of the Base hospitals. Anaesthetists are available in all hospitals up to Base hospital level. Out of the 6 Base

hospitals only one had the services of a Paediatrician for the ETU. Physicians were available only up to the level of the Base hospitals. Only one Base Hospital in the study had a dedicated triage nurse for the unit, meaning that 97% of the ETUs including the two General hospitals do not have such an individual. Despite having the Triage Nurse, that Base hospital at the moment does not have a specified Triage area. Only one district Hospital in the study had a separate triage area for the unit. Only 17% (6) of the ETUs have a name board indicating the unit entrance. None of the units in the general hospitals and the peripheral hospitals had a name board for the unit. Only 1 base hospital (out of 6) and 4 district hospitals (out of 19) and 1 rural hospital (out of 2) had name boards. However the study did not assess the quality of the name board as it would need personal assessment by the interviewer.

Out of the hospitals that have ETUs, 86% (32) have access to an ambulance within the institution. All the units in the General hospitals, Rural hospitals and Peripheral units have ambulance facilities. One Base hospital (17%) and 4 District hospitals (20%) have no ambulance facilities.

Next, the study focused on the various investigation facilities available for the patients admitted to the ETU (**Figure16-3**). Full Blood count was available in only 42% of ETUs and out of these it was available for 24hours in only 2 units (17%). ESR was available in 53% of ETUs and only 2 units (54%) of them were working 24 hours. Capillary Blood Sugar was available in only 50% of the units. Blood Gas Analysis was available in only 2 ETUs (10%) and only 1 was available 24 hours. Serum Electrolytes was available in only 6.7% of the ETUs and all of them were available throughout the day.



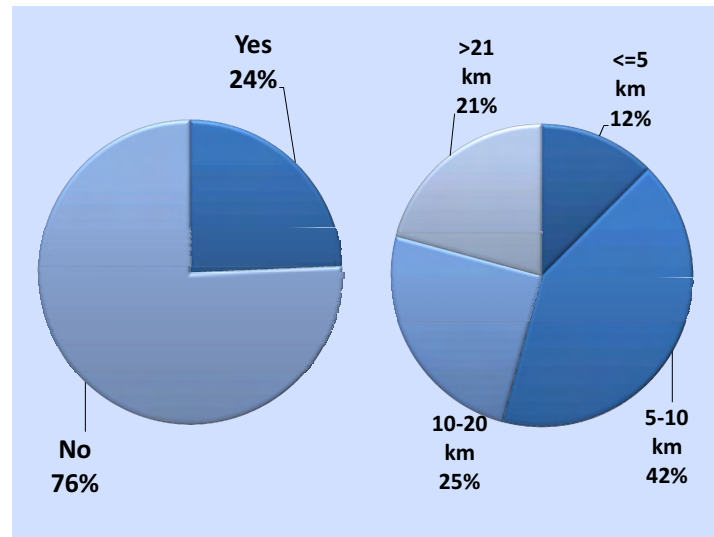
**FIGURE 16- 3:** AVAILABILITY OF BASIC INVESTIGATION FACILITIES

None of the District hospitals, Rural hospitals and Peripheral Units had the facility. Blood urea was available in only 4 units (14%) and out of them only 1 was available for 24 hours. X ray facilities were available in 4 ETUs, all of which were in General and Base hospitals. Out of them only 1 was working for 24 hours. ECG facilities were available in 29 ETUs (80.6%). 81% (17) of those that have ECG facility were functioning for 24 hours. All General and Base hospitals had the facility throughout the day.

Only 24.3% (9) of the units had a surgical theatre at its disposal if the need arose and all of them were working throughout the day.

Four ETUs (10.8%) had an ICU within the relevant healthcare institution and is available should the need arise. Three of the four ICUs were MICUs while one was a SICU.

A blood bank was available within the institution in 24.3% (9) of the units (**Figure 16-4**). In institutions that did not have a Blood bank 12% had such a



**FIGURE 16- 4: ACCESS TO A BLOOD BANK**

facility within 5km, 42% between 5and 10km. Only 21% had a Blood bank more than 21km away.

## 16.2.2 AVAILABLE PHYSICAL RESOURCES

### A. AIRWAY

Oral/nasal airways are available in majority of the facilities (62%). Suction devices are available in 89% (31) of the institutions that participated in the study. Out of these except for 4 District hospitals all other institutions had operable suction devices. Laryngoscopes are available in 60% (21) of the hospitals. Endotracheal Tubes are available only in 57% (20) of the institutions. It was revealed that Bag-Valve-Masks are available in 71% (25) of the institutions. Out of these all the General hospitals and majority of Base hospitals had the facility but this facility was available only in 50% of the District and Rural hospitals.

### B. BREATHING

Except for one Peripheral unit all other healthcare institutions in the study (97%) at present are capable of providing Oxygen to its patients. Chest tubes are available in 84% (31) of hospitals in the study.

### C. CIRCULATION

It was pleasing to know that all the ETUs have separate Blood Pressure apparatus for the unit. Only 19% (7) ETUs in the study have blood transfusion capabilities. Out of these all General Hospitals and 50% of Base hospitals had the facility whereas none of the District and Rural

hospitals had the facility. From the Peripheral units only 86% had the possibility for transfusion. All ETUs in the study had intravenous infusion sets available within the relevant units. Electronic cardiac monitoring was available only in 35% (13) of the ETUs. Defibrillators were available only in 30% (11) of the ETUs. All General and Base hospitals had Defibrillators in their ETUs. Majority of the other categories did not have a defibrillator within the ETU.

#### D. MEDICATIONS AND FLUIDS

Lignocaine is one of the most commonly used anaesthetics in the country. Despite this it was surprising to know that 22% (8) of the ETUs did not have it at their disposal. Out of the District hospitals and Peripheral units 25% and 43% did not have Lignocaine. Morphine is a drug which is used for various reasons from Cardiac causes to post-operative pain management. Only 65% (24) of the ETUs had morphine in their stores. All General and Base hospitals and majority of (65%) District hospitals had morphine. Diazepam was available in all the ETUs in the study.

With regards to antibiotics, all the ETUs had Amoxycillin and 81% (30) of ETUs had Benzylpenicillin. Ceftriaxone was available only in 22% (8) of the ETUs. Majority of the District hospitals, Rural hospitals and Peripheral units did not have Ceftriaxone. Gentamycin was available in 81% (30) of the ETUs in the study. Except for one peripheral unit all other ETUs had Metronidazole in their stores.

Glucose solution (5%,50%) was available in the majority of the ETUs (97%). Normal Saline (0.9% NaCl) was available in all the ETUs whereas Ringer's Lactate solution was available only in 78% (29) of the ETUs. All the ETUs of General and Base hospitals had the Ringer's Lactate solution. Mannitol was available in 70% (26) of the ETUs. All General and Base hospitals and majority of District hospitals and Peripheral units had Mannitol in the in ETUs.

Furusemide was available in 84% of the ETUs (31); except for 17% of Base hospitals and 20% of District hospitals all others had Furusemide. Insulin was available in 78% (29) of the ETUs. Calcium Gluconate which is a drug used in hyperkalaemia was available only in 27% (10) of the ETUs.

Except for two ETUs, (one Rural hospital and one Peripheral unit) all others had Atropine. Epinephrine, which is considered as one of the lifesaving drugs was available only in 24% (9) of the ETUs. However all General hospitals had Epinephrine. Heparin was available only in 19% (7) of the ETUs in the study. Out of these none of the District hospitals, Rural hospitals and Peripheral units had Heparin. Vitamin K was available only in 43% (16) of ETUs. 50% of General hospitals and 55% of District hospitals at the time of the study did not have Vitamin K in their respective ETUs.

## 16.3 KNOWLEDGE OF THE STAFF

### 16.3.1 KNOWLEDGE OF DOCTORS

#### A. AIRWAY MANAGEMENT

With regards to managing the Airway (**Figure16-5**), 69% (20) said that they were confident in performing the Tripple manoeuvre and 3 said that they were unaware of such a procedure. Out of the doctors who had responded 94% said that they could put the patient into the recovery position confidently. 88% (28) said that they were confident in inserting an Oral or Nasal Airway. All the doctors (32) were confident on using the sucker. With regards to performing assisted ventilation using the Bag-Valve-Mask 94% (30) said that they were confident in performing it correctly. Insertion of an ET tube could only be done by 50% of doctors confidently. Cricothyroidotomy with or without Tracheostomy could only be performed by 13%(4) of the doctors in the study.

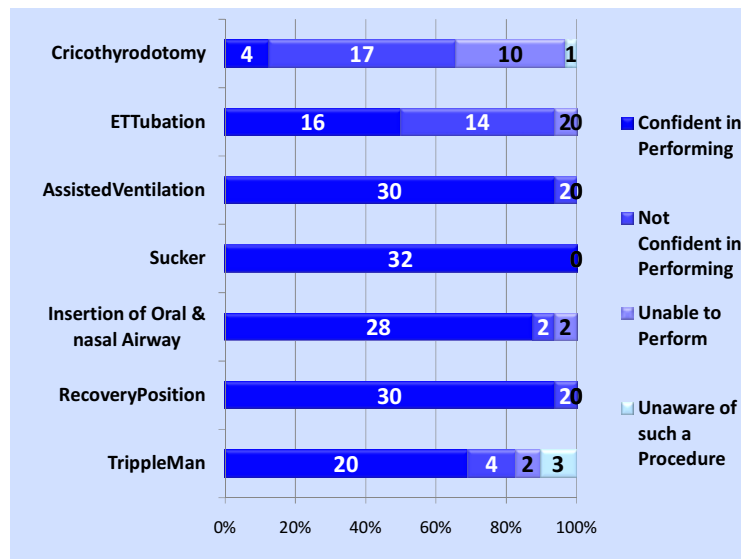


FIGURE 16- 5: DOCTORS' KNOWLEDGE ON AIRWAY MANAGEMENT

#### B. MANAGEMENT OF BREATHING

With regards to the management of Breathing (**Figure16-6**), 88% of doctors said that they were confident in assessing respiratory distress and the adequacy of ventilation. The majority (97%) said that they were confident in administering O<sub>2</sub> to patients. Needle thoracotomy and chest tube insertion could only be performed by 47% and 28% respectively.



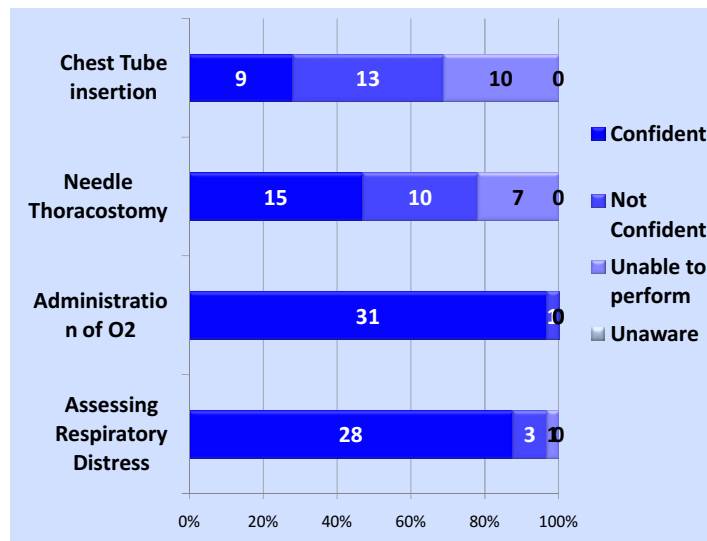


FIGURE 16- 7: DOCTORS' KNOWLEDGE ON BREATHING MANAGEMENT

### c. MANAGING CIRCULATION

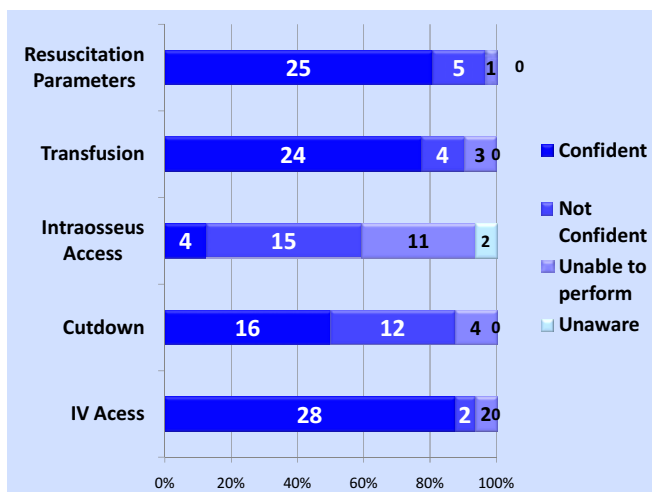


FIGURE 16- 6: DOCTOR'S KNOWLEDGE ON MANAGING CIRCULATION

In managing circulation 93.8% (30) of doctors said that they were confident in assessing shock, using compression for control of haemorrhage and correctly using fluid resuscitation. Only 78% were confident in splinting fractures for the control of haemorrhage, 18.7% said that they were not confident and the rest said that they were unable to perform it.

Majority of the doctors (87.5%) were confident in performing percutaneous intravenous access

(Figure 16-7). Peripheral venous cutdown could be performed only by 50% of doctors and a further 12.5% said that they were unable to perform it altogether. Intraosseus access for the fluid administration of children could only be done confidently by 13% (4) of doctors that responded, while 37% said that they were unable to perform it; a further 6.6% said that they were unaware of such a procedure. Confidence in blood and components transfusion and the knowledge on resuscitation parameters was 77% (24) and 80% (25) respectively. Only 58% (18%) of doctors said that they were confident in identifying the causes of shock. Approximately 75% of doctors said that they were confident in using warmed fluids. With regards to identifying hypothermia 71% (22) said that they were confident in doing so. A further 10% (3) said that they would be unable to identify if the need came up.

## 16.3.2 KNOWLEDGE OF NURSES

### A. MANAGEMENT OF AIRWAY

When it comes to managing the airway in a traumatized patient the triple manoeuvre and putting the patient into recovery position are two of the essential techniques that a healthcare provider should know. Despite this only 50% (15) of the nurses said that they were confident in performing the Triple maneuver and 30% (9) said that they were unaware of such a procedure (**Figure 16-8**). However, the vast majority (90%) said that they were confident in putting the patient into recovery position. It is pleasing to know that all the nurses that had responded were confident in using the sucker and another 83% is confident in giving assisted ventilation to patients. Only 74% (23) of nurses were confident in inserting an oral or a nasal airway. Inserting an endotracheal tube and performing cricothyrotomy could only be performed by 23% and 2% confidently. But as these procedures are expected to be carried out only by trained medical officers these percentages could be considered acceptable.

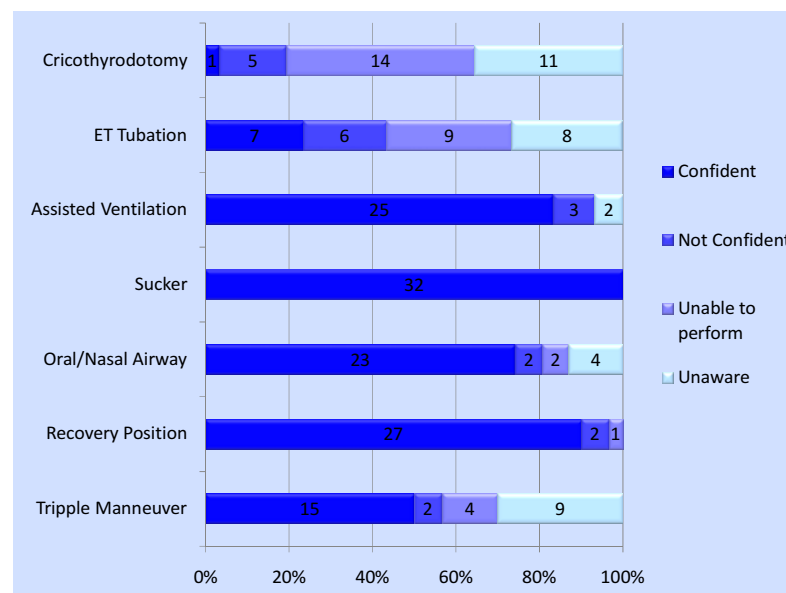


FIGURE 16- 8: NURSE'S KNOWLEDGE ON AIRWAY MANAGEMENT

### B. MANAGEMENT OF BREATHING

Majority of nurses (81%) said that they were confident in assessing respiratory distress (**Figure 16-9**). Almost all the nurses that had responded said that they were confident in administering Oxygen to patients. Very few were confident in performing needle thoracotomy and chest tube insertion. But once again since these procedures were not expected to be carried out by nurses these figures were expected.

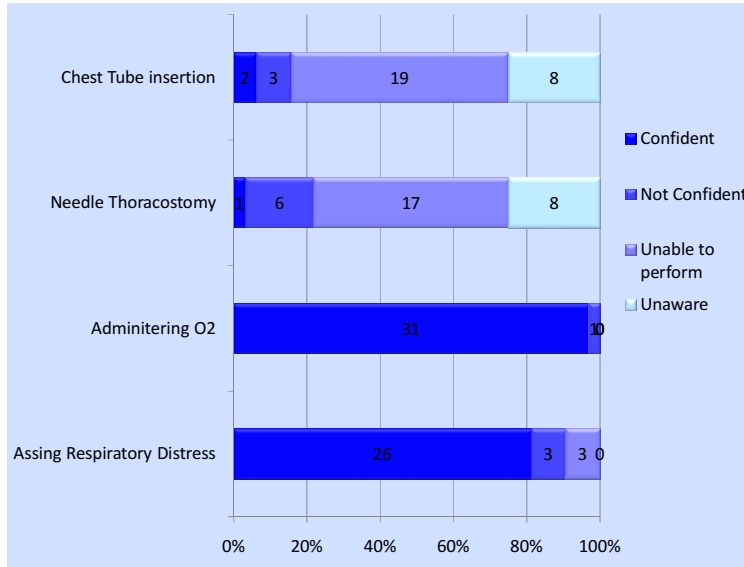


FIGURE 16- 9: NURSE’S KNOWLEDGE ON BREATHING

c. MANAGING CIRCULATION

When it comes to managing the circulation in a trauma victim, the majority of nurses said that they were confident in assessing the causes of shock (81%) and splinting of fractures to stop haemorrhage (88%). Almost all the nurses that had responded said that they were confident in using compression for the control of haemorrhage.

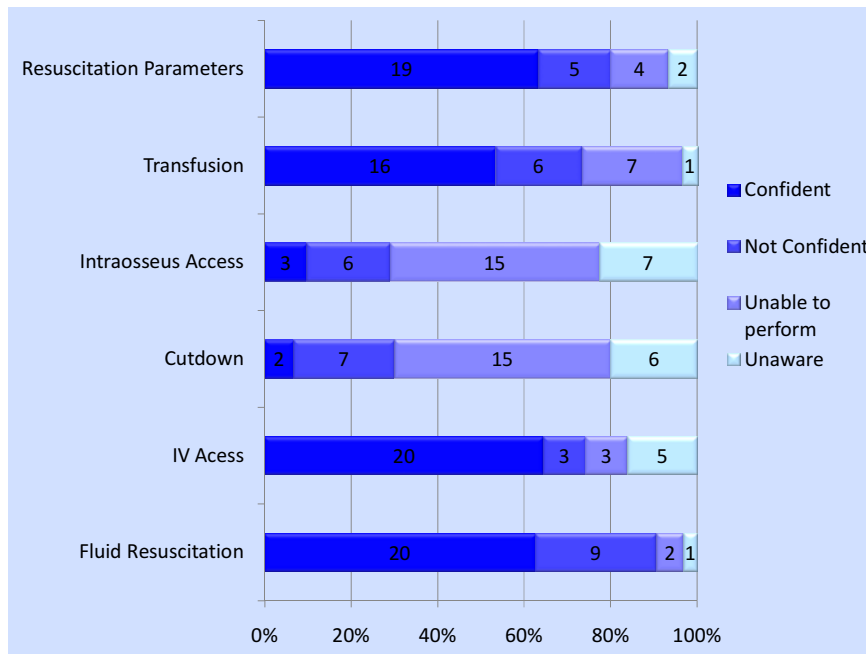


FIGURE 16- 10: NURSE’S KNOWLEDGE OF CIRCULATION MANAGEMENT

Approximately 63% of the nurses said that they were confident in their knowledge on resuscitation parameters. Transfusion of blood and blood components could only be done by 53% confidently. Fluid resuscitation to shocked victims and obtaining IV access could be done

by 63% and 65% respectively. Very few were able to perform peripheral venous cut-down and obtaining intraosseus access in children for fluid administration. However majority of these procedures are expected to be carried out only by doctors, but procedures such as obtaining intravenous access and administering fluid resuscitation may have to be done by nurses especially in mass casualty situations.

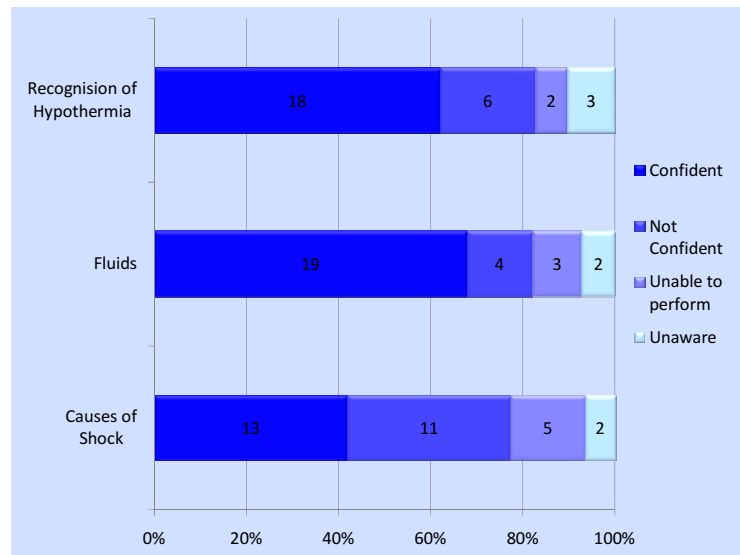


FIGURE 16- 11: NURSE’S KNOWLEDGE OF SHOCK MANAGEMENT

Only 42% of the nurse said that they were confident in identifying the causes in a shocked victim. With regards to using warmed fluids for resuscitation 68% (19) said that they were confident in doing so whereas another 7% said that they were unaware of such a technique. Recognition of hypothermia could be done by 62% of nurses.

## 16.4 OPINION OF THE STAFF

### 16.4.1 OPINION OF DOCTORS

#### A. BENEFITS OF HAVING THE UNIT

Out of the 34 doctors that had responded to the study 30 (91%) said that they believed having the unit helps to provide a more individualized care to the patients. Seven (21%) doctors disagreed to the question that having the ETU would reduce the waiting time of patients to receive treatment. The vast majority of doctors (97%) said that the ETU helps them to provide a more efficient care to patients and improve patient survival. Twenty two doctors (73.3%) said that having the ETU reduces the workload of the staff. Only 52% (16) of doctors said that the ETU would reduce the economic burden on the healthcare institution.

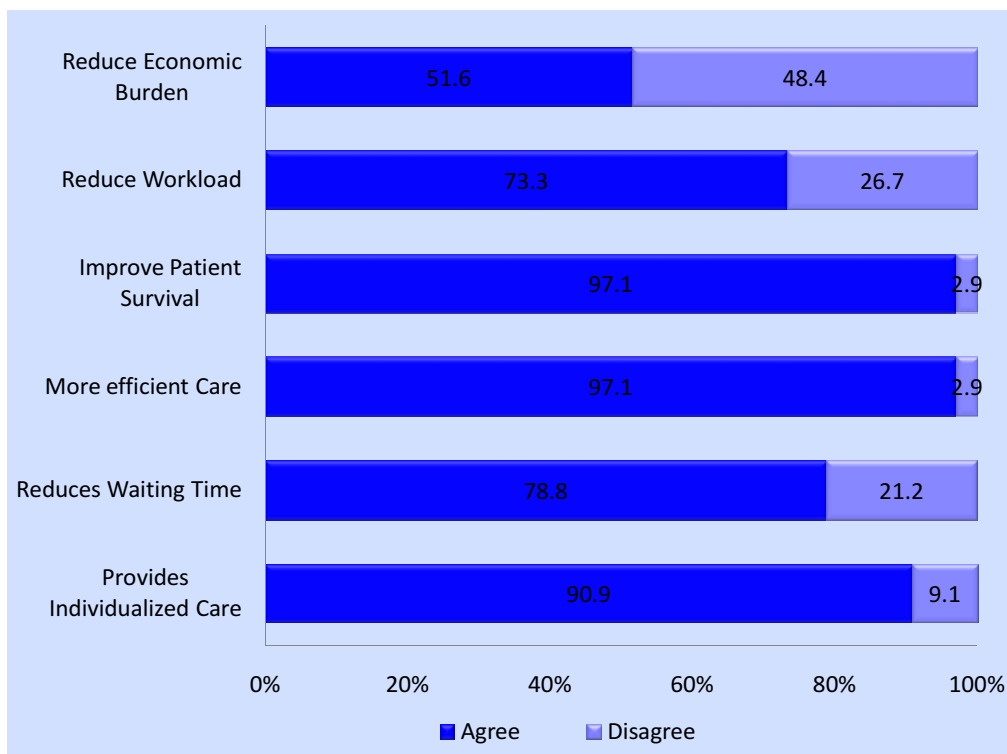


FIGURE 16- 12: DOCTOR'S OPINION ON ETU

#### B. DISADVANTAGES OF HAVING THE UNIT

The study also focused on what the respondents think as disadvantages of having an ETU. Out of the doctors that had responded to the study approximately 50% (15) said that having the ETU actually increases the economic burden on the institution. Only a minority (12) of doctors said that the ETU increases the workload of the staff outside the ETU.

**c. OPINION REGARDING THE ADEQUACY OF STAFF**

Approximately 79% of the doctors said that they had inadequate staff allocated to the hospital. Out of them 78.8% said that there are inadequate doctors, 82% said that they had inadequate nurses.

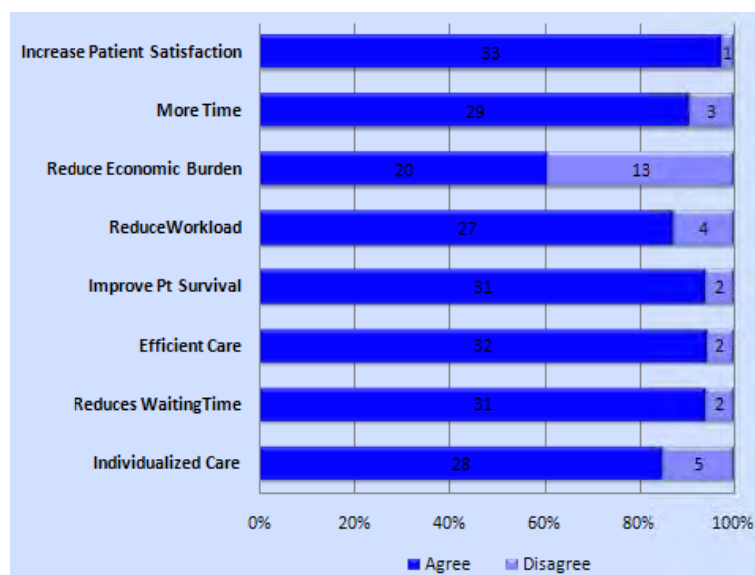
**d. OPINION REGARDING THE SHORTCOMINGS OF THE UNIT**

The study also asked about what the respondents felt as the shortcomings of the current ETU. The vast majority said that there were many shortcomings in the current ETU. 82% said that its layout should be better, 94% said that the unit has inadequate laboratory facilities. Inadequate equipment and inadequate drugs were seen in 91% 76.5% respectively. The majority (88%) also said that there is inadequate training of staff.

**16.4.2 OPINION OF NURSES**

**A. BENEFITS OF HAVING AN ETU**

Majority of the nurses said that having an ETU benefits not only the patients but the healthcare institution as well. Almost all agreed that the unit increases patient satisfaction (97%), improves patient survival (94%), reduces the waiting time of the patients to receive treatment (94%) and improves the efficiency of care provided (94%). Out of the nurses that responded 91% (29) said that having the unit helps them to allocate more time to each patient. A further 87%(27) said that having an ETU causes a reduction in the workload of staff outside the unit whereas 85% said that it helps them to give a more individualized care to patients. However, only 61% said that the ETU would reduce the economic burden on the institution.



**FIGURE 16- 13: NURSE'S OPINION ON ETU**

**B. DISADVANTAGES OF HAVING AN ETU**

Almost half of the nurses (41%) said that the ETU would increase the cost to the healthcare institution. It is also heartening to see that only 27% (9) felt that having the unit increases the workload of the staff outside the ETU

**C. INADEQUACY OF STAFF**

The vast majority of nurses felt that the unit has been allocated inadequate staff of all categories. They felt that the nurses were the most inadequate category at 91% (31) followed by doctors and attendants at 85% (29).

**D. SHORTCOMINGS OF THE UNIT**

According to nurses there were many shortcomings of the current ETU in their facility. Almost all (94%) felt that they were not given adequate training. Approximately 91% and 90% said that the unit had inadequate equipments and inadequate laboratory facilities respectively. They also said that the ETU was poorly laid out (87%) and 79% pointed out that there was inadequate drugs in the unit.