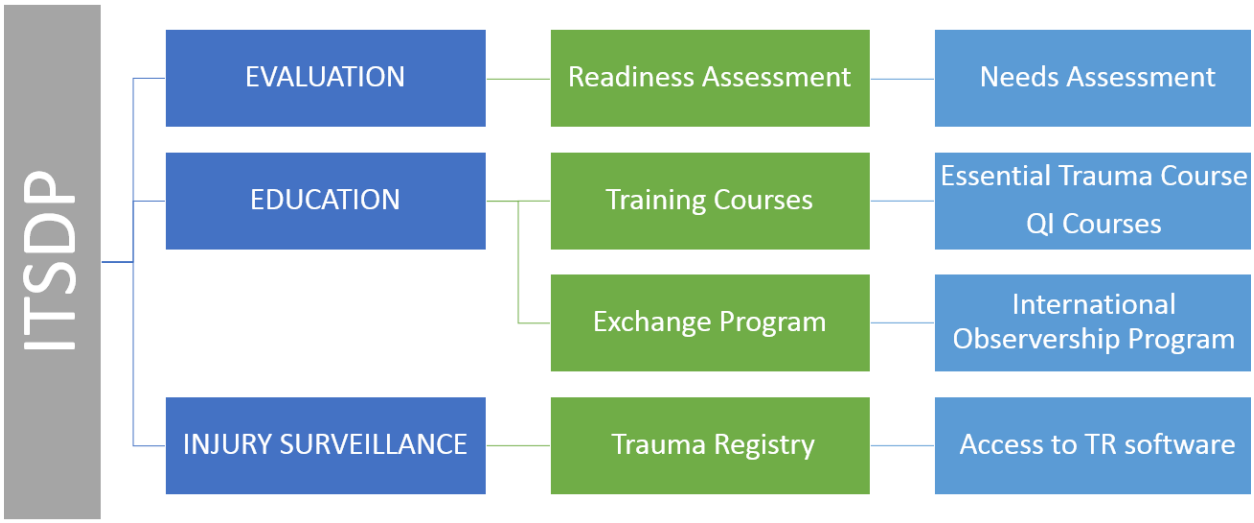
Implementation Plan for the ITSDP's Trauma Registry

1. Introduction

The Virginia Commonwealth University's International Trauma System Development Program (ITSDP) is the international component of VCU Health Trauma Center (VCU-TC). The ITSDP's mission is to lead strategic collaborative capacity building efforts for the ongoing enhancement of trauma and emergency systems in low- and middle-income countries through the delivery of three core activities:

a. Evaluation and readiness assessment of trauma and emergency facilities.
b. Training of healthcare and administrative personnel of trauma and emergency facilities.
c. Access to Trauma Registry (injury surveillance and performance monitoring tool)

Core Activities



Evaluation

The ITSDP offers to interested institutions the opportunity to have a readiness assessment as a means to identify hospitals' needs, strengths, weakness, resources and any modifications needed to meet minimum structural and logistical requirements.

Education

Continuous education updates healthcare providers' knowledge, enhances their competency, improves the quality of surgery practice and increases the effectiveness of patient care. ITSDP's educational activities will promote best practices for emergency and trauma systems and will seek to close the gap between optimal care and the care that is provided in the trauma and emergency settings.

Injury Surveillance

Trauma and emergency systems operating in low- and middle-income countries usually are faced with the challenges and pressures of health care inequities and scarcity of resources. Nevertheless, there is an urgent need to provide both essential and cost-effective trauma care. A major impediment to trauma system development and provision of essential trauma care in these regions is the inadequate or nonexistent data. The under-registration of mortality and morbidity impedes accurate assessment of the true burden of injury, resulting in a reduction of allocation of resources for essential trauma care. The ITSDP's Trauma Registry is a tool used to document and monitor, and evaluate trauma care at the hospital, regional or national levels.

2. Overview of the Trauma Registry

The Trauma Registry developed by the ITSDP is a key performance monitoring tool to assist continuing improvement efforts in low- and middle-income countries. The strengthening of trauma and emergency systems is possible when trauma registries are incorporated into their ongoing monitoring and evaluation process.

A hospital-based trauma registry is the most important initial step for the development of trauma systems. Trauma registries are the cornerstone of the ongoing assessment work that is performed as part of the quality improvement activities and which data results support decision-making processes so health care providers and policymakers can make informed decisions about procedures and policies to enhance the care of injured patients and trauma and emergency services.

The Trauma Registry is used to collect, store and retrieve data describing the etiologic factors, demographic characteristics, diagnoses, treatments, and clinical outcomes of individuals who meet specified case criteria.

3. Description of the ITSDP's Trauma Registry

The ITSDP's Trauma Registry is a flexible, user-friendly, accessible, electronic hospital-based injury surveillance tool for the ongoing monitoring and evaluation of the quality of trauma and emergency systems. The TR systematically collect, store, and summarize information about trauma patients who are treated in a particular institution(s). The TR offers 4 tiers of complexity based –on the number of variables:

Prehospital Tier	Prehospital data captured by EMS agencies.
Essential Tier	Includes the minimum variables (50) needed to support QI programs.
Expanded Tier	Capture additional data and CIE-10 coding. Support benchmarking.
Advanced Tier	Comprehensive dataset (250 variables). Recommeded for large urban facilities.

4. Objective of ITSDP's Trauma Registry

The **Main Objective** of the Trauma Registry is to provide information that can be utilized to improve the efficiency and quality of trauma and emergency systems. The entered data is analyzed and the results would support hospital's quality improvement efforts, decision-making process, assessment of clinical performance, and overall quality of care.

The implementation of the Trauma Registry is not one-step activity. In order to meet the objective of the Trauma Registry, it requires to keep on several post-implementation and ongoing activities. Similarly, it is essential the commitment from the leadership team to guarantee the provision of needed resources for the long-term use of the Trauma Registry.

5. Data Collection Target of the ITSDP's Trauma Registry

In order to have meaningful data results, it is needed to enter a significant number of patients' records. Each hospital MUST determine its **data collection target** or the number of registries that will be entered to the Trauma Registry per year. To establish this goal, the hospital should consider the following:

- Number of injured patients/month or year.
- Inclusion criteria (the broader the inclusion criteria the higher number of patients that will need to be entered and more data entry personnel or registrars may be needed).
- Amount of data elements that will be collected and tier that will be used. The essential elements tier has about 50 data elements to enter per patient compared to the full version or Advanced Tier which has 250+ elements. Keep in mind that the more data elements to be collected the more resources such as time and staff may be needed.

The following **inclusion criteria**[1]can be used as a guide for selecting trauma patients that will be entered into the Trauma Registry. A trauma patient is defined as an individual who has suffered a traumatic injury and who meets the following criteria:

1. Patients with trauma injuries ADMITTED to the institution or those with a DISCHARGE from the institution where the registry is implemented, having at least one of the following ICD-10 injury diagnosis codes:

[1] Recommended by the National Trauma Data Standard (United States) for consistency.

- S00-S99 with seventh character extensions of A, B, or C only. (Injuries to specific body parts – initial encounter)
- T07 (unspecified multiple injuries)
- T14 (injury of unspecified body region)
- T20-T28 with seventh character extension of A only (burns by specific body parts – initial encounter)
- T30-T32 (burn by total body surface area (TBSA) percentages)
- T75.1 (drowning), T71 (asphyxiation), T75.4 (electrocution)

Also, consider the following:

- Did the trauma injury result in death? (Independent of the hospital admission or hospital referral status)
- Was the patient transferred to your hospital from another hospital using an EMS service or air ambulance?
- Was the patient considered as a hospital admission according to YOUR specific hospital inclusion criteria

2. Include patient who sustained at least one injury with a diagnostic code outside the range of S00, S10, S20, S30, S40, S50, S60, S70, S80, S90.

3. The following isolated injuries should be excluded:
   S00 (Superficial injuries of the head)
   S10 (Superficial injuries of the neck)
   S20 (Superficial injuries of the thorax)
   S30 (Superficial injuries of the abdomen, pelvis, lower back and external genitals)
   S40 (Superficial injuries of shoulder and upper arm)
   S50 (Superficial injuries of elbow and forearm)
   S60 (Superficial injuries of wrist, hand and fingers)
   S70 (Superficial injuries of hip and thigh)
   S80 (Superficial injuries of knee and lower leg)
   S90 (Superficial injuries of ankle, foot and toes)

Additional Notes:

- The patient registry includes all patients ADMITTED to hospitalization and includes those admitted for observation, including patients who have been admitted for less than 23 hours.
- This does not include patients who are under observation in the Emergency unless such patients are in the emergency because there is no bed available in the hospital.
- Patients who are not admitted to hospital should not be registered.

6. Resources for the Implementation of the ITSDP's Trauma Registry

The identification of resources involves the identification of resources—financial and non-financial—are needed for the implementation of the Trauma Registry in each hospital and how they will be used to deliver the desired outcome (ongoing use of the Trauma Registry).

When identifying resources, the hospital must consider human resources, materials, and equipment. The below table is a guide of the resources needed for the implementation of the Trauma Registry.

<table>
<tr><th>Type of Resources</th><th>Description</th></tr>
<tr><td>Access fees</td><td>The Trauma Registry annual dues are as follows:
<table>
<tr><th>Tiers</th><th>Essential Tier
$</th><th>Expanded Tier
$$</th><th>Advanced Tier
$$$</th></tr>
<tr><td>Features</td><td>50 variables

Technical support

Online training (videos and manual)</td><td>51-249 variables

Technical support

Online training and face-to-face workshops</td><td>250 variables

Technical support

Online training and face-to-face workshops</td></tr>
</table></td></tr>
<tr><td>Human Resources</td><td>The Trauma Registry requires three different types of users.

Data Entry: this type of user is equivalent to the trauma registrar, they only have access to data entry, meaning that they will only be able to enter records and modify them when needed. They will not have access to data analysis or report viewing. Data entry personnel must have at least basic medical knowledge such as medical assistants, nurses or paramedics. To define the number of data entry personnel or registrars needed to review the recommendations in the box below:

The following organizations recommend specific data collection targets per registrar per year:
• The American College of Surgeons suggests 750 to 1000 patients per registrar per year.
• The National Trauma Data Bank suggests 500-750 patients per registrar per year.
• ITSDP trauma registry recommends for the Essential Tier 1000-1500 patients per registrar per year.

Data Viewers: this is an optional role and is given to any hospital's staff who wants to have access to data. Data viewers only have viewing privileges, meaning that they will only be able to run reports to view the data, they will not have access to data entry or modifying any data or assigning users to the registry.</td></tr>
</table>

	Data manager: this type of user will have both data entry and report viewing privileges as well as the capacity to assign users and assign their role type. Basic statistical knowledge is recommended for this role. **Please keep in mind that if an employee needs to have both data entry and report viewing privileges, they should be assigned as a Data Manager. Each hospital must decide on the financial compensation for data entry personnel or registrars.
Equipment	• Physical space: data entry personnel require equipped workstations and a space for the team. • Computers or laptops (Tablets depending on resources) with internet connectivity, and access to supported browsers, as well as access to trauma registry). • Data extraction forms (optional) depend on the chosen data abstraction method. • Access to printers/copiers.
Internet	The registry is designed to work through an internet connection and works in a browser independent of any device (desktop, laptop, mobile phone, tablets etc.) The system is designed to work on following browsers with support for cookies and JavaScript enabled. • Mozilla Firefox (version 3.6 and higher) • Internet Explorer (version 9 and higher) • Google Chrome • Apple Safari There are no specific internet requirements. Having high speed-internet is preferred but not absolutely required. The system is designed to use as little bandwidth as possible so that the site performs adequately over the high-speed (Fiber Optic, Cable, DSL) and wireless (Wi-Fi) internet connections. Other than the “Search”, “Reporting” and “Download” features, all registry page sizes are below 50 KB (kilobyte) which requires less bandwidth than using the email application.

7. Implementation Action Plan

The Implementation action plan outlines the sequence of steps or activities that must be taken to the implementation of the Trauma Registry.

Identification of Financial Resources

Each hospital must assess the feasibility of the allocation of financial resources aimed to guarantee the long-term sustainability of the Trauma Registry.

Identification of Human and Material Resources

Please review the information provided under item 6. Resources

Training and Education

Trauma Registry personnel must receive training on how to use Trauma Registry software.
There are 2 types of training:

- Online training using videos and help manual is free of charge. It is appropriate for users of the Essential Tier because they do not need training in trauma scores and ICD-10.
- Site training: upon request, an instructor will be able to visit the site and deliver a workshop. The site will be in charge of covering airfare, lodging, and meals for the instructor.

Trauma Registry users for extended and advanced tiers should be trained on severity scores (ISS, AIS, OIS), and ICD-10. It is the responsibility of the hospital's Trauma Program leadership and administration to provide the required score severity training.

Any other additional educative workshops are hospitals' responsibilities.

Data Extraction

Each hospital or facility must define the data extraction method that will be used:

Data can be collected retrospectively or concurrently:
Retrospectively or data extracted after discharge allows for a comprehensive review of the clinical procedures rendered, the medical charts are more likely to be complete and kept in a secure room. It's less costly because does not require many resources. A pre-determined time frame is set up for completion of the chart in the registry, for example, 30, 60, or 90 days post discharge. A data extraction form for the Essential Tier is available.

Concurrent or real-time data extraction allows for prompt reporting and tracking. It requires committed efficient effort from the registrar since they will need to locate and reviewing charts daily for any changes in busy patient care areas. It's more costly because require more resources.

Data Collection

Once identified the method of abstraction and the inclusion criteria, the team must establish a process that will be used to collect the data.

For collecting retrospective data, the data manager will check for a list of patients (case finding) that have been discharged on the previous day. Once identified, the manager will assign each registrar with a patients' records. Each registrar should be responsible for entering the data in the registry. They may do this directly into the registry with the patient record or they can do this by using a data extraction form and then transferring the data into the registry (this may take more time).

Once the patient has been entered the data manager must assure that this has been completed.

Performance Monitoring and Data Validity Process

The data manager in conjunction with registrar must assure that the data entered into the registry is a true representation of what has been abstracted, meaning it should be complete and error free.

Data analysis and Reporting

Each hospital should determine how often will analyze the data collected and report the results. The Trauma Registry support this process by offering pre-standardizes report templates that can be easily generated. Expanded and Advanced tiers allow data managers to analyze correlations such as mortality and complications, or complications and procedures. For more information read the help manual.
The data collected can be analyzed every 3, 6, 12 months.

Use Results to Support QI Activities

If data reporting is generated on a regular basis, the results would be able to support hospital's quality improvement activities including ongoing monitor, benchmarking, identification of areas for improvement, staff training needs, and improvement performance on a site, regional or national level.

8. Budget

The below budget table is a guide to identifying main costs related to the implementation of the Trauma Registry:

Item	Description	Cost
Readiness Assessment		
Needs Assessment *(Optional for Essential Tier)*	VCU trauma surgeons will visit sites to assess their level of readiness for the implementation of the TR and also will provide a needs assessment (identifying gaps between current conditions and desired conditions). ***Does not include travel and lodging for the surgeon***	$$$
Training Courses		
Online basic TR training	Users will be trained using the available online resources: videos and help manual.	FREE
Training on use & applicability of TR platform *(Optional for Essential Tier)*	***Does not include travel and lodging for the surgeon***	$$$
QI courses *(Optional for Essential Tier)*	This course seeks to promote a better understanding of the field of QI; to provide training on straightforward and practical techniques, such as preventable death reviews; and to discuss with participants ideas on future development of trauma QI and related training. ***Does not include travel and lodging for the surgeon***	$$$
Trauma Registry		
License Fees	Annual or one-time Fee ???	$$$
Annual maintenance	Telephone, internet, remote access	$$
Data entry staff	Annual costs	$$
Equipment	Computers, office space, other office supplies	
	Estimated total cost	

ITSDP Trauma Registry

Annex 1. Summary of the Implementation plan/ Checklist

Please complete the following table providing specific details of resources, objective, activities included in the action plan, and budget.

Hospital Name:	**City/Country:**	**Tier:**
Registry coordinator:	**Title:**	**Expected Implementation Date:**
Email:	**Phone:**	**Data Collection Target:**

Description of Resources	**Total budget:**
Financial:	
Equipment:	
Human Resources:	
Access Fees:	
Inclusion Criteria Definition:	

Action Plan
Training Plan for users:
Data Extraction Method:
Data Collection Method:
Performance Monitoring and Data Validity:
Data Analysis and Reporting of Results:
Anticipated utilization of Data Results and QI Activities:
Potential Barriers:

*** This summary table must be filled out and submitted with the signed Memorandum of Understanding.

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Signature/Date