TRAUMA SERVICES

Annual Report 2011

St. Michael's

Inspired Care. Inspiring Science.
There are examples in this report of correspondences from trauma patients and their families who have come to St. Michael’s Hospital (SMH) for their care. Over the last year we have received letters from patients and families that express gratitude, acknowledge the physicians and clinicians who have made a difference in their lives and suggest ways we can do better. We value each of those letters as they tell a story about a trauma patient and their experience at SMH. This annual report is one way we can share detailed information about the state of trauma at SMH.

We are proud of our trauma team and their continuing efforts to provide our patients with the highest quality of care. The team is composed of a large group of people that work closely together to coordinate and deliver excellent patient-centered care. The trauma team includes experts in emergency care, trauma, orthopaedics, neurosurgery, rehabilitation and more than a dozen other specialties. These experts provide injured people with the most advanced care available both at the bedside and in the lab designing cutting-edge trauma research. Injury prevention and awareness programs, and trauma education innovations complete the spectrum of advanced care initiatives available to our patients.

Each year in our annual report we focus on one significant contributor to the trauma team. This year we are recognizing the contributions made by the Geriatric Program team. Using a multidisciplinary approach, the Geriatric team provides an individual consultation for all trauma patients over the age of 65. In this report we have highlighted some of the Geriatric team’s activities that improve the lives of our older trauma patients.

The Canadian population is aging; as our country changes so does our trauma population and our approach to trauma care. Our commitment to geriatric trauma is an excellent illustration of the evolution of our commitment to our patients and their families. Our goal is not to just save lives but to provide a holistic approach to the care of our patients with the long term goal of better clinical outcomes and a high quality of life following a trauma.

Our annual report highlights and acknowledges our commitment to service and collaboration and honours the work of every member of our inter-professional trauma team. This team works collaboratively to facilitate the early identification of patient care needs, coordinate care, increase timeliness in referrals and expedite transfers and repatriation of patients to their home hospital. The remarkable levels of enthusiasm, flexibility and teamwork within the program provide ongoing opportunities to bring the care of the most severely injured patients to the highest level.

Avery B. Nathens, MD PhD, FACS
Canada Research Chair in Systems of Trauma Care Division Head, General Surgery & Director of Trauma
# Table of Contents

1. **St. Michael’s Hospital**
   - St. Michael’s Trauma Program

2. **Our Patients**
   - Age
   - Gender
   - Mechanism of Injury
   - Transfer & Transport to St. Michael’s Hospital
   - Top 10 Referring Facilities
   - Trauma Team Activations
   - Injury Characteristics
   - Mechanism of Injury
   - Survival by Mechanism of Injury
   - Injury Severity Score (ISS)
   - Survival Rate by ISS
   - Severe Injuries by Body Region
   - Intentional Injuries
   - Emergency Department Disposition
   - Surgical Activity
   - Transfusion Medicine
   - Massive Transfusion Protocol

3. **Resource Utilization**
   - Length of Stay
   - Discharge Disposition
   - Our Rehabilitation Partners
# Table of Contents

## 5 Quality Assurance & Accountability
- Trauma Registry ........................................... 9
- Quality Assurance .......................................... 9

## 6 Optimizing Care and Outcomes
- University of Toronto Trauma Program Governance Committee ........ 11
- Evidence Based Practice & Guidelines ................................ 11
- Trauma Related Protocols ...................................... 11
- World Health Organization Trauma Care Checklist .................... 11

## 7 Focus 2011: Geriatric Trauma

## 8 Education & Research
- Advanced Trauma Care for Nurses (ATCN) .......................... 15
- Advanced Trauma Life Support Course (ATLS) ......................... 16
- Advanced Trauma Operative Management (ATOM) .................. 16
- Breakfast of Our Champions (BOOC) ................................ 17
- Rural Trauma Team Development Course (RTTDC) ................. 18
- Telemedicine for Trauma Resuscitation .............................. 18
- ThinkFirst Injury Prevention Strategy for Youth (TIPSY) ............ 18
- Trauma Team Evaluation and Management (TEAM) ............... 19
- Trauma Continuum Conference ...................................... 19

## 9 Trauma Related Research

20
St. Michael’s Hospital (SMH) is a Catholic teaching and research hospital founded by the Sisters of St. Joseph in 1892 to care for the sick and poor of Toronto’s inner city. Affectionately known as the Urban Angel, SMH is renown for providing exceptional patient care. As downtown Toronto’s adult trauma centre, the hospital is a hub for neurosurgery, complex cardiac and cardiovascular care, diabetes and osteoporosis care, minimally invasive surgery and care of the homeless and disadvantaged. SMH is also one of the province’s major sites of care for critically ill patients.

Fully affiliated with the University of Toronto (UofT), SMH provides outstanding medical education to health-care professionals across more than 23 academic disciplines. Home to the Li Ka Shing Knowledge Institute, made up of the Keenan Research Centre and the Li Ka Shing Healthcare Education Centre, the hospital is among the first in the world to bring together researchers, educators and clinicians to take best practice and research discoveries to patient bedsides faster.

At SMH, we recognize the value of every person and are guided by our commitment to excellence and leadership.

♦ We provide exemplary physical, emotional and spiritual care for each of our patients and their families.

♦ We balance the continued commitment to the care of the poor and those most in need with the provision of highly specialized services to a broader community.

♦ We build a work environment where each person is valued, respected and has an opportunity for personal and professional growth.

♦ We advance excellence in health services education.

♦ We foster a culture of discovery in all our activities and supporting exemplary health services research.

♦ We strengthen our relationships with universities, colleges, other hospitals, agencies and our community.

♦ We demonstrate social responsibility through the just use of our resources.

The commitment of our staff, physicians, volunteers, students, community partners and friends to our mission ensures we maintain a quality of presence and tradition of caring, the hallmarks of SMH.
SMH Trauma Program

Ontario’s trauma system is designed to ensure that whenever a person is injured, they will receive the appropriate level of care in a timely fashion. Ontario has 9 adult and 2 pediatric trauma centres designated by the provincial government. SMH designation, which first occurred in 1992, identified the unique resources available at SMH to care for the province’s most severely injured patients.

Severely injured patients rarely have a choice as to where they receive care. As a result, trauma centres differ from other hospitals in many respects. The trauma team is activated each time a severely injured patient arrives at SMH. The team is comprised of a trauma team leader (TTL), two emergency department (ED) nurses, respiratory therapist, x-ray technician and medical staff representing general surgery, anaesthesia, and orthopedic surgery. The trauma team is highly trained to act quickly in caring for complex patients in a dynamic environment often with only limited information available. Our acceptance rate of 100% for appropriate provincial trauma referrals emphasizes our commitment to trauma care. We provide trauma care to both the most vulnerable populations in the downtown core, and to those far beyond downtown.

Our trauma team is composed of multidisciplinary specialists and services including: the blood bank, sophisticated medical imaging department and operating rooms immediately available to attend to patients 24/7. The Allan T. Lambert Trauma & Neurosurgery Intensive Care Unit (TNICU) always has a bed ready to receive a critically ill trauma patient. Virtually every day in 2011, a trauma patient was admitted to the TNICU. Following the initial evaluation and management, there is a team of professionals including nurses, physiotherapists, occupational therapists, dietitians, recreation therapists, speech/language pathologists and social workers (among many others) to begin the rebuilding process for patients and their families after the most devastating injuries. This inter-professional team works collaboratively to facilitate the early identification of patient care needs, enhance the coordination of care, increase timeliness in referrals and expedite transfers and repatriation of patients to their home hospital. The enthusiasm, flexibility and teamwork within the Program provide ongoing opportunities to bring the care of the most severely injured patients to the highest level.

The SMH Trauma Program is accredited by the Trauma Association of Canada as a Level 1 trauma centre. Accreditation requires that external reviewers examine the resources and trauma care delivery to assure that trauma centres provide the highest quality of care.

SMH Trauma Team Activation (TTA) guidelines identify those patients who have a significant likelihood of requiring urgent operative intervention or admission to a critical care setting and/or a high likelihood of significant morbidity or death. These guidelines make sure the right patient gets to the right destination at the right time.

While a trauma patient can be defined rather broadly as an injured person who needs a health care professional to diagnose and treat actual or potential injuries, for the purposes of this annual report we are reporting on trauma team activations (TTA) only.

This report focuses on the 597 patients for whom the trauma team was activated in 2011. SMH cares for many trauma patients who do not activate the trauma team but benefit from the specialized services and expertise that exist in trauma hospitals.
Our Patients

Age
Trauma continues to be a disease of the young. The majority of our patients were between the ages of 20 - 39 years old.

Gender
Year over year, males consistently comprise approximately 75% of trauma activations.

Mechanism of Injury
Blunt injuries such as motor vehicle crashes and falls are the predominant mechanisms of injury for our patients.

Trauma was identified over 40 years ago as a ‘neglected disease’ and it continues to be a leading cause of loss of life to this day despite advances in trauma care. It is a preventable and frequently predictable disease.
Transfer and Transport to
St. Michael’s Hospital

In 2011, 58% of patients were transported directly from the scene of injury to SMH (Table 1). The remainder (42%) were transferred in from a community hospital (Table 2). While the majority of patients are transported by land ambulance, we also receive patients transported by helicopter.

Source of Patients

Table 1

<table>
<thead>
<tr>
<th>Direct from Scene</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Ambulance</td>
<td>83%</td>
<td>85%</td>
<td>88%</td>
</tr>
<tr>
<td>Air Ambulance</td>
<td>17%</td>
<td>15%</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Interfacility Transfer</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Ambulance</td>
<td>58%</td>
<td>58%</td>
<td>67%</td>
</tr>
<tr>
<td>Air Ambulance</td>
<td>42%</td>
<td>42%</td>
<td>33%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Trauma Team Activations

The trauma team is activated prior to a patient’s arrival using a two tiered response so that the composition of the team is matched to the anticipated needs of the patient. Both tiers require the trauma team to prepare for the arrival of a trauma patient with likelihood of severe injury. Tier 1 activations allow us to prepare for patients who might require immediate surgical intervention, with the staff surgeon, operating room and blood bank all being notified simultaneously to prepare for a critically injured patient.

Examples of mechanism of injuries that would lead to a Tier 1 activation are gunshot or stab wounds and patients who have sustained blunt force trauma where the patient has hemodynamic instability.

Top 10 Referring Facilities

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>% of all transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Osler Health System (Brampton &amp; Etobicoke sites)</td>
<td>10</td>
</tr>
<tr>
<td>Muskoka Algonquin Healthcare (Bracebridge &amp; Huntsville sites)</td>
<td>9</td>
</tr>
<tr>
<td>Credit Valley Hospital (Mississauga)</td>
<td>8</td>
</tr>
<tr>
<td>Rouge Valley Health System (Ajax &amp; Scarborough sites)</td>
<td>7</td>
</tr>
<tr>
<td>Lakeridge Health Corporation (Bowmanville, Oshawa &amp; Port Perry sites)</td>
<td>6</td>
</tr>
<tr>
<td>Peterborough Regional Health Centre (Peterborough)</td>
<td>6</td>
</tr>
<tr>
<td>Humber River Regional Hospital (Humber &amp; York/Finch sites)</td>
<td>4</td>
</tr>
<tr>
<td>Royal Victoria Hospital (Barrie)</td>
<td>4</td>
</tr>
<tr>
<td>Georgian Bay General Hospital (Midland &amp; Penetang sites)</td>
<td>4</td>
</tr>
<tr>
<td>Orillia Soldier’s Memorial Hospital (Orillia)</td>
<td>3</td>
</tr>
</tbody>
</table>
### Injury Characteristics

Injuries can be classified in a number of ways (e.g. fall, motor vehicle collision), severity, the body location of injuries or intent (e.g. unintentional or intentional). The tables and graphs that follow show the mechanism of injury for trauma patients. This information is stratified for all injuries and according to the Injury Severity Score (ISS). Higher ISS are associated with decreased survival rate. An ISS greater than 15 identifies patients with a very high risk of death.

### Mechanism of Injury

Motor vehicle collisions (MVC) are the most common mechanism of injury for our trauma patients.

<table>
<thead>
<tr>
<th>Mechanism of Injury</th>
<th>All Injuries (n = 597)</th>
<th>Severe Injuries (ISS&gt;15) (n = 332)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of patients</td>
<td>% of patients</td>
</tr>
<tr>
<td>Motor Vehicle</td>
<td>29</td>
<td>32</td>
</tr>
<tr>
<td>Fall</td>
<td>21</td>
<td>26</td>
</tr>
<tr>
<td>Stab</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Pedestrian/Cyclist</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Struck By / Against</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Gunshot Wound</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>13</td>
</tr>
</tbody>
</table>

### Survival by Mechanism of Injury

There are many factors that affect survival and recovery after injury including underlying patient factors (age, other diseases) and mechanism of injury. The majority of trauma patients admitted to SMH survive.

<table>
<thead>
<tr>
<th>Survival Rate by Mechanism of Injury</th>
<th>% of trauma patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stab</td>
<td>99</td>
</tr>
<tr>
<td>Struck by/against</td>
<td>95</td>
</tr>
<tr>
<td>Other</td>
<td>95</td>
</tr>
<tr>
<td>Motor vehicle</td>
<td>95</td>
</tr>
<tr>
<td>Pedestrian/Cyclist</td>
<td>90</td>
</tr>
<tr>
<td>Fall</td>
<td>82</td>
</tr>
<tr>
<td>Gunshot wound</td>
<td>76</td>
</tr>
</tbody>
</table>

### Injury Severity Score

In 2011, more than half of trauma patients had an ISS of 15 or higher.

#### Injury Severity Score

<table>
<thead>
<tr>
<th>ISS Range</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-8</td>
<td>21%</td>
<td>21%</td>
<td>23%</td>
</tr>
<tr>
<td>9-14</td>
<td>21%</td>
<td>21%</td>
<td>21%</td>
</tr>
<tr>
<td>15-24</td>
<td>24%</td>
<td>19%</td>
<td>21%</td>
</tr>
<tr>
<td>25-44</td>
<td>32%</td>
<td>31%</td>
<td>29%</td>
</tr>
<tr>
<td>45-75</td>
<td>7%</td>
<td>7%</td>
<td>6%</td>
</tr>
</tbody>
</table>
Survival Rate by ISS

Severe Injuries by Body Region

Injuries are classified by their location and severity. Trauma patients frequently have more than one injury. Last year, we identified 823 severe injuries (defined as an Abbreviated Injury Severity Score ≥ 3) in 546 patients. This figure illustrates the distribution of these 823 injuries by body region.

Intentional Injuries

Injuries are typically classified as unintentional, intentional or undetermined intent. Approximately a quarter of traumatic injuries seen at SMH are intentional assaults or self-inflicted, the majority of which are stab wounds.

Intentional Injuries

Emergency Department (ED) Disposition

Following their initial assessment and resuscitation in the ED, 34% of patients are transferred to the TNICU. An additional 22% require direct transportation from the emergency department to the operating room for immediate operative management for their injuries.

### Emergency Room Disposition

<table>
<thead>
<tr>
<th>Disposition</th>
<th>% patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive Care Unit</td>
<td>34</td>
</tr>
<tr>
<td>Inpatient Unit</td>
<td>31</td>
</tr>
<tr>
<td>Operating Room</td>
<td>22</td>
</tr>
<tr>
<td>Home</td>
<td>11</td>
</tr>
<tr>
<td>Death in the Emergency Department</td>
<td>2</td>
</tr>
<tr>
<td>Transfer to Specialty Care</td>
<td>1</td>
</tr>
</tbody>
</table>
Surgical Activity

This past year more than 31% of trauma patients required one or more surgical interventions to manage their injuries. Patients with multisystem injuries may be cared for by numerous subspecialties including plastic surgery, general surgery, neurosurgery and orthopedic surgery during a single trip to the operating room.

<table>
<thead>
<tr>
<th>Blood Product</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRBC</td>
<td>1129</td>
<td>1514</td>
<td>1312</td>
</tr>
<tr>
<td>Platelets</td>
<td>78</td>
<td>129</td>
<td>103</td>
</tr>
<tr>
<td>Plasma / Cryoprecipitate</td>
<td>368</td>
<td>494</td>
<td>413</td>
</tr>
</tbody>
</table>

Massive Transfusion Protocol

Massive hemorrhage is defined as transfusion of 10 or more PRBC units in a 24 hour period. Massive hemorrhage is a leading cause of potentially preventable death in trauma. The Trauma Program follows a massive transfusion protocol (MTP) designed to provide patients with timely and adequate replacement during massive blood loss using appropriate blood components. The MTP is activated for patients experiencing substantial blood loss with anticipated ongoing uncontrolled hemorrhage.

In 2011, the MTP was initiated 42 times for trauma patients.

<table>
<thead>
<tr>
<th>Number of times MTP called</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blunt trauma</td>
<td>14</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>Penetrating trauma</td>
<td>9</td>
<td>10</td>
<td>12</td>
</tr>
</tbody>
</table>

Over 85% of U.S. Level 1 trauma centres have a Massive Transfusion Protocol, the majority (like ours) were adopted within the past 5 years.
3 Resource Utilization

Length of Stay

Among admitted trauma patients, the average length of stay in 2011 was 13.4 days and the average ICU length of stay was 8.5 days.

Discharge Disposition

While the majority of our patients were discharged home, 21% of our trauma patients were discharged to a rehabilitation facility for additional care.

Our Rehabilitation Partners

<table>
<thead>
<tr>
<th>Rehabilitation Destination</th>
<th>% patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. John’s Rehabilitation Institute</td>
<td>22</td>
</tr>
<tr>
<td>Toronto Rehabilitation Institute</td>
<td>19</td>
</tr>
<tr>
<td>Bridgepoint Health</td>
<td>21</td>
</tr>
<tr>
<td>West Park Healthcare Centre</td>
<td>18</td>
</tr>
<tr>
<td>Providence Healthcare (Scarborough)</td>
<td>15</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
<tr>
<td>Bloorview Kids Rehabilitation</td>
<td>1</td>
</tr>
</tbody>
</table>

“I would like to thanks the dr’s + staff for saving my life and taking such good care of me.”
4 Quality Assurance & Accountability

Trauma Registry

The trauma registry is a comprehensive database of information of each trauma patient’s traumatic injury and clinical presentation, ongoing care and ultimate outcome at discharge from SMH. This data is evaluated as part of our own internal performance improvement activities and is also submitted to the Ontario Trauma Registry for regional trauma system evaluation.

In addition to submitting our data for Provincial and National analysis, since 2007 we have been submitting our injury data to the United States (US) National Trauma Databank. We are able to evaluate our outcomes and processes of care against US trauma centres as part of the American College of Surgeons, Trauma Quality Improvement Program (TQIP). The TQIP pilot project began in 2007 with 21 centres, including SMH. In 2011 there were 113 participating sites across the US. We are the only Canadian site currently participating in this initiative.

Quality Assurance (QA)

The Trauma Quality Assessment and Performance Improvement Report (TQAR) is a program based tool that we use to monitor and evaluate trauma care. The report uses established quality indicators that have been determined by consensus among our trauma colleagues. The TQAR report allows us to evaluate current QA efforts and provide direction for future QA initiatives. The TQAR is reviewed at the Trauma Care Committee quarterly and is also reviewed at the Trauma/Neurosurgery Program Council.

In 2011, the TQAR reported on over 50 outcome and process indicators across the continuum of trauma care from trauma team activation to discharge. Detailed chart reviews based on the indicators such as TTL response times, how much time is spent in the trauma bay, adverse events during medical imaging, blood product use including massive transfusions and fibrogen usage, time to orthopedic surgery and triage errors related to level of trauma activation.

In 2011, we continued to refine appropriate utilization of our massive transfusion protocol, trauma team activation guidelines, pain management in the ED, care of those patients with mental health issues and those with an acute risk of suicide intent and management of traumatic brain injuries.

The 2011 TQIP risk adjusted benchmark reports directed us to a detailed ongoing review of tracheostomy timing and end of life care including family meeting planning. This work continues in 2012.
University of Toronto Trauma Program Governance Committee

In 2011, a University of Toronto Trauma Program Governance Committee was developed at the University level with representation from SMH and Sunnybrook Health Sciences Centre (SHSC). The committee began work on collaborating and developing standardized agreements on interfacility transfer criteria, repatriation agreements, EMS triage, development of harmonized fellow education and rotation experiences across the two sites for residents and fellows and standardizing rounds and clinical practice guidelines. A UofT trauma program website was developed, as well as Twitter page. UofT Joint Trauma Rounds reviewing management and care of the trauma patient were initiated.

Evidence Based Practice Guidelines

Evidence Based Practice Guidelines and Protocols set the standards for treatment of the injured patient and are based upon a review of current trauma literature. There are close to 20 trauma specific protocols and guidelines in place at SMH.

The UofT trauma program initiatives in 2011 included exploring the harmonizing of protocols across SHSC and SMH and having them readily accessible from a mobile device. The trauma team have received and been educated on the many protocols related to trauma but the goal of the mobile application is to make these protocols easier to follow and more accessible in a one page format that will be more helpful to the team during a busy trauma resuscitation.

Revised Guidelines in 2011:

- Massive Transfusion Protocol
- Trauma Team Activation Guidelines

Trauma Related Protocols:

- Alcohol Screening and Brief Intervention Operational Guidelines for Trauma Patients
- Epidural Analgesia Protocol Chest Tube Management and Removal in Trauma Patients
- Cervical / Thoracic / Lumbar Spine Clearing Guidelines
- Geriatric Trauma Operational Guidelines
- Guidelines for Management of Penetrating Abdominal, Flank and Back Trauma
- Guidelines for Management of Penetrating Neck Trauma
- Gunshot Wound Police Disclosure
- Imaging of the Genitourinary Tract
- Intra-Abdominal Bladder Pressure Monitoring
- Massive Transfusion Protocol
Prophylaxis for Venous Thromboembolism in Trauma and Neurosurgical Patients

• Resuscitation Protocol in Patients with Major Torso Trauma
• Screening for Blunt Cerebrovascular Injuries
• Trauma-Neurosurgery Intensive Care Admission and Discharge Policy
• Trauma and Neurosurgery Inpatient Unit Admission Criteria for Intermediate Care Beds
• Trauma In Pregnancy
• Trauma Team Activation

World Health Organization (WHO) Trauma Care Checklist:

In 2011 SMH participated in the study of the implementation of the World Health Organization (WHO) Trauma Care Checklist. The trauma care checklist is a simple, easy to use tool that has the potential to exponentially decrease the morbidity and mortality associated with injury around the world. The evidence-based checklist includes components of injury assessment and initial management steps, and functions as a prompt for care information transmission to other providers after the patient leaves the emergency room. It is a listing of the basic and vital tasks to be completed during the intake of a trauma patient in the emergency room.

This study ended in December 2011, at which time SMH had the opportunity to revise the checklist to suit our needs. There were over 70 observed cases and the checklist is now being used consistently in the ED. TTL’s noted that small things were likely to get missed less (e.g. antibiotic and tetanus administration), and that a review of the checklist was a welcome part of the process allowing everyone to “take a breath as you leave the trauma bay.”

“Overall excellent experience. I felt like I was the only patient under their care!”

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WHO TRAUMA CARE CHECKLIST

<table>
<thead>
<tr>
<th>PRIOR TO ED DEPARTURE</th>
<th>ON ARRIVAL IN ICU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is airway secure or do you anticipate further airway intervention?</td>
<td>1. Have all diagnostical tests and imaging studies been reviewed?</td>
</tr>
<tr>
<td>Yes/ No, plan discussed with team</td>
<td>Yes/ No, not yet available but plan in place for follow-up</td>
</tr>
<tr>
<td>2. Is the patient’s GCS 3 or below?</td>
<td>2. If there additional imaging required?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, order for imaging written in chart and communicated to referring unit</td>
</tr>
<tr>
<td>3. Has a CT scan been obtained and pneumothorax ruled out?</td>
<td>3. Has the appropriate imaging of the G, T and L spines been completed?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, not done for imaging</td>
</tr>
<tr>
<td>4. Is the pulse oximeter on the patient and functioning?</td>
<td>4. Has an arterial blood gas been performed?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, not done for imaging</td>
</tr>
<tr>
<td>5. Are the pelvic x-ray been reviewed to rule out a pelvic # and pelvic binder considered?</td>
<td>5. Is the patient in shock (Base deficit ≤ 6 or persistent tachycardia or hypotension)?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, yes the patient has needed surgery?</td>
</tr>
<tr>
<td>6. Is the patient’s pulse &gt; 100 and blood pressure &lt; 90?</td>
<td>6. Has blood been ordered and MTP considered?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, yes the patient has needed surgery?</td>
</tr>
<tr>
<td>7. Are the appropriate fluids (crystalloids/blood) been initiated?</td>
<td>7. Are any imaging studies underway or pending?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, yes the patient has needed surgery?</td>
</tr>
<tr>
<td>8. Has an arterial blood gas been performed?</td>
<td>8. Have you checked the neurovascular status of all 4 limbs?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, not done for imaging</td>
</tr>
<tr>
<td>9. Are the temperature been recorded and hypothermia excluded (T&gt;38)?</td>
<td>9. Have you checked the neurovascular status of all 4 limbs?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, not done for imaging</td>
</tr>
<tr>
<td>10. Have the appropriate agents been administered?</td>
<td>10. Have the consultants stated their plan?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, not done for imaging</td>
</tr>
<tr>
<td>11. Have the necessary agents been prepared for transport?</td>
<td>11. Are any members of the team aware of any issues or concerns that have not been addressed prior to departure from the trauma bay?</td>
</tr>
<tr>
<td>Yes/ No</td>
<td>Yes/ No, not done for imaging</td>
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Focus on 2011: Geriatric Trauma

Each year we focus on one significant contributor to the trauma team. This year we are recognizing the contributions made by the Geriatric Trauma Consultation Service (GTCS) at SMH. Using a multidisciplinary approach, the GTCS provides consultation services for older trauma patients who would benefit from additional expertise, assessment and treatment related to the functional, cognitive, medical, and psychosocial issues affecting the older trauma patient.

Delays in recognizing the special needs of older trauma patients can result in suboptimal care and increase resource utilization and mortality. The GTCS at SMH was started in 2007 with the goals of preventing and managing age-specific complications related to co-morbidities and optimizing discharge planning. To our knowledge, this proactive geriatric consultation model in a trauma setting does not exist elsewhere in Canada.

The GTCS team is comprised of geriatricians and a specialist nurse. Trauma patients 65 years or older are seen by a geriatrician and/or nurse specialist within 72 hours of admission to the trauma service. The geriatric trauma consultation involves a targeted assessment and recommendations on functional, cognitive, medical and psychosocial issues. Issues addressed by the GTCS can be broadly categorized as follows:

- medication reconciliation, delirium or dementia, mood disorder, continence, sensory impairment, pain, pressure ulcers, nutrition, mobilization, restraints, other medical complications, and discharge planning.

Below are some of the many clinicians who are committed to improving the lives of our senior trauma patients:

Camilla L. Wong

Dr. Wong is an Assistant Professor at the University of Toronto and an Associate Scientist at the Li Ka Shing Knowledge Institute at SMH. Dr. Wong’s areas of interest include geriatric trauma, perioperative care of seniors and prevention of hazards of hospitalization.
Sharon E. Straus
Dr. Straus is the Director, Knowledge Translation Program, Li Ka Shing Knowledge Institute at SMH and University of Toronto and Division Director, Geriatric Medicine, University of Toronto. Dr. Straus’s areas of interest include knowledge translation and quality of care, precision and accuracy of diagnostic tests, health informatics, mentorship and medical education. Dr. Straus holds a Tier I Canada Research Chair in Knowledge Translation.

Marisa Zorzitto
Dr. Marisa Zorzitto is a Geriatrician and Division Head of the Regional Geriatric Program, her research interests include dementia care and clinical ethics. She leads a telehealth elders clinics and provides geriatric medicine consultation services for patients at rehabilitation and retirement facilities in addition to her work in acute care of the elderly.

Lee Ringer
Lee Ringer is a Clinical Nurse Specialist on the Geriatrics Internal Consultation Team. Her particular interests include dementia care and challenging behaviours in the acute care setting. Lee is also an educator in the Gentle Persuasive Approach in Dementia Care.

Research Highlights:
An Evaluation of a Proactive Geriatric Trauma Consultation Service
Magda Lenartowicz, Meredith Parkonovick, Amanda McFarlan, Barbara Haas, Marisa Zorzitto, Sharon Straus, Avery Nathens, Camilla Wong

This was a retrospective case series of consecutive trauma patients admitted pre-GTCS (March 2005 to August 2007) and post-GTCS (September 2007-March 2010). Data extraction was conducted incorporating both review of the medical record and the SMH Trauma Registry Database. Abstracted data included general demographics, type of geriatric issues addressed, trauma-related and geriatric-specific clinical outcomes, adherence rate to recommendations made by the GTCS, consultation requests made to other subspecialties, and discharge destination. After the program was introduced there was a 10% reduction in delirium and fewer patients were discharged to long term care.

“I would like to thank the doctors & nurses very very much for keeping me alive! You all did a wonderful respective, responsible job! Thank you very much!!”
In the news: St. Mike’s offers first trauma program for seniors

Toronto Star. Monday August 01, 2011.
By Theresa Boyle

But in the hustle and bustle of a trauma unit, their complex medical histories aren’t always fully explored.

“My focus is very fast-paced and I don’t have the ability to get all the information I need to make a difference,” concedes Dr. Avery Nathens, a trauma surgeon. “If you gloss over these things the patient will be at a higher risk of adverse outcomes, no question about it.”

Enter geriatrician Dr. Camilla Wong. She does the detective work, gleaning as much information as she can from the patient. But she goes much further, tracking down family doctors, specialists and pharmacists. She interviews relatives and learns what patients were like before their accidents. Did they have mobility or cognitive issues? Were there problems with memory or depression?

Exploring this history helps the medical team determine what needs to be done to help the patient regain the highest level of function.

The specialist says much of the value in the Geriatric Trauma Consultation Service is in preventing problems from occurring after patients arrive in hospital. Using delirium as an example, she says more than half of elderly trauma patients suffered from the condition prior to the creation of the service. Delirium is an acute confusional state that the patients, often seniors, can fall into when they become physically ill. It can have a spiral effect because confused patients often try to get out of their hospital beds and can end up falling.

Dr. Camilla Wong, geriatrician in the trauma unit at St. Michael's Hospital, says older people are more vulnerable to delirium when they are admitted, slowing their recovery.

Highlights from the Toronto Star Article

Seniors typically make for more complex patients because they tend to have chronic conditions for which they take a number of medications. When in traumatic accidents, they tend to suffer much more severe injuries than younger patients since, for example, their bones are more brittle. Also, they have a lower ability to tolerate injuries due to reduced cardiac, lung and kidney function.
Education & Research

Advanced Trauma Care for Nurses (ATCN®)

This two day course is offered in collaboration with the Advanced Trauma Life Support (ATLS®) course and is endorsed by the Society of Trauma Nurses. The interdisciplinary learning format enhances team building and a greater understanding of interdisciplinary roles in the management of the trauma patient. Physicians and nurses attend a series of interactive ATLS® lectures together, with the nurses then spending the remainder of the course focusing on knowledge and technical skill stations relevant to their work on the trauma team.

ATCN® skill stations include:
- Initial Airway and Management
- Airway and Ventilatory Management
- Spine and Extremity Injuries
- Head Trauma
- Hemorrhagic Shock
- Pediatric Trauma

“It was all very relevant to my practice. It has instilled a lot of confidence in me to manage trauma patients.”
- ATCN® participant

In 2011, the ATCN® program dissemination across Ontario continued with courses being offered at London Health Sciences Centre and Sudbury Regional Hospital. Hamilton Health Sciences and the Ottawa Hospital / L’Hôpital d’Ottawa were verified as independent ATCN® sites in 2011. A total of 6 ATCN® student courses and 2 ATCN® faculty courses were conducted in 2011. Since the introduction of the ATCN® course to Canada in 2008 by SMH a total of 284 nurses have completed the course and there are a total of 31 faculty spread across Ontario.

SMH ATCN® Courses 2008 - 2011

<table>
<thead>
<tr>
<th>Year</th>
<th># of Participants</th>
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<tbody>
<tr>
<td>2008</td>
<td>38</td>
</tr>
<tr>
<td>2009</td>
<td>59</td>
</tr>
<tr>
<td>2010</td>
<td>104</td>
</tr>
<tr>
<td>2011</td>
<td>83</td>
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Advanced Trauma Life Support Course (ATLS®)

The ATLS® provides a framework of knowledge and techniques for the initial management of a trauma patient. Internationally, the course is offered in over 63 countries and over one million physicians have taken the course.

At SMH, the ATLS® course has been taught for over 16 years with a focus on teaching UofT medical residents from diverse disciplines including Family Medicine, Emergency Medicine, Anesthesia, Orthopedic Surgery, Cardiac Surgery, Neurosurgery, Plastic Surgery and General Surgery.

In the last 16 years of the ATLS® program at SMH 921 physicians have been completed the course. A total of 6 courses were conducted at SMH in 2011 and with 74 participants completing the course.

“I found the course truly excellent. I wish I had taken this course earlier, it would have increased my knowledge base and confidence. Very practical clinical information, engaging instructors.”

- ATLS® course participant

Advanced Trauma Operative Management (ATOM)

The ATOM course is a unique one day course designed to teach advanced techniques in trauma surgery in a one-on-one mentored environment and in a practical laboratory setting to senior level surgical residents. Research has demonstrated that ATOM training has a positive effect on trauma related knowledge and skills. SMH is one of four sites across Canada to offer this course. The course has been conducted at SMH annually since 2003. In 2011, 24 senior surgical residents from the UofT and McMaster University had the opportunity to take this course.
Breakfast of Our Champions
(BOOC): Building Bridges and Opening Doors

This inter-disciplinary event is held in partnership with our colleagues in the Mobility Program at SMH. The aim of this event held every 18 months is to showcase and share the exciting research, clinical practice and education initiatives being led by our colleagues.

The theme of the 2011 event was “Building Bridges and Opening Doors”, in recognition of the new bridge linking the main hospital to the new research and education buildings. The event had a total of 45 posters displayed and over 140 SMH staff attended the event.

In addition, 20 of the posters presented at the November 2009 BOOC event have been published in peer-reviewed journals since the event. These authors were also recognized at the event.

2011 BOOC Awards:

Building Bridges & Opening Doors (Theme)
Patient and family needs in the first six months of transition to community living after moderate or severe acquired brain injury: A telehomecare study.

Novice Award
Practicing the ‘Prevention Intention’: Facilitating Pressure Ulcer Prevention Practice Change in an Orthopedic Setting
A. Rankine, J. Hon, S. Lu, A-M. McLaren, L. Teague

Best Poster Award - Trauma
Comparison of Two Patient Pain Observational Tools in a Trauma/Neurosurgical Intensive Care Unit
J. Topolovec-Vranic, C. Gelinas, M A. Pollmann-Mudryj, S. Canzian, J. Innis, A. McFarlan, Y. Li

Best Poster Award - Mobility
Advanced Clinician Practitioner in Arthritis Care (ACPAC) Program-Trained Therapists in Ontario: Impact on System Integration and Change
Rural Trauma Team Development Course (RTTDC®)

The RTTDC® was developed by the Rural Trauma Committee of the American College of Surgeons Committee on Trauma. The course is designed to enhance the development of rural trauma teams and highlights a team approach that addresses the common problems in the initial assessment and stabilization of injured patients. The RTTDC® is designed to increase the efficiency of stabilization of injured patients, resource utilization and improve the overall level of care provided to the injured patient in the rural/community environment. In 2011, staff from SMH were responsible for conducting courses in Ontario, New Brunswick and as far away as India.

Telemedicine for Trauma Resuscitation

Teletrauma is an emergency telemedicine application that allows for the assessment and treatment of trauma patients through a “consult” using live, two-way videoconferencing with a remote trauma specialist. Building on the e-model of the Telestroke Program, the Telemedicine for Trauma Resuscitation program aims to ensure timely access to care at a Teletrauma site for all trauma patients in Ontario unable to access trauma treatment at local hospitals within the necessary treatment window.

In addition to the 3 original teletrauma sites (Bracebridge, Huntsville, Peterborough), Humber Finch, Humber Church and Scarborough are on board and other facilities have expressed interest in participating. SMH and SHSC joined efforts this year to support a 24/7 teletrauma TTL availability and call coordination through CritiCall.

ThinkFirst Injury Prevention Strategy in Youth (TIPSY)

The TIPSY Program is an on-site injury prevention program that was adopted by SMH in 2006 and is delivered by dedicated SMH staff. Offered throughout the academic year, high school students in the Greater Toronto Area between the ages of 15 - 19 are educated about risk taking behaviours and their consequences. Students are given an overview of basic brain and spinal cord anatomy. They participate in discussions with Mothers Against Drunk Drivers, Toronto Police Services, Safe and Sober Canada, as well as a Voice of Injury Prevention (VIP) spokesperson who has sustained either a brain or spinal cord injury. The VIP recounts the first-hand events that led to their injury and explains the consequences and lasting effect of their injury. The students participate in walking tours of the Trauma Bay in the ED, the Trauma/Neurosurgery ICU and Trauma/Neurosurgery In-Patient Unit.

Dr. Chris Hicks, in ED with teletrauma monitor
Trauma Team Evaluation and Management (TEAM)

The TEAM course content is an introduction to the concepts of trauma assessment and management, adapted from ATLS course.

All second year medical students at the UofT participate in this day long education workshop held throughout the academic year which includes classroom teaching, a series of clinical trauma case scenarios and practice in the Allan Waters Family Simulation Centre at SMH.

Trauma Continuum Conference

In November 2011, the Trauma Continuum Conference continued its success from 2010 by hosting a second sold-out one day interprofessional conference with the theme of “ED & Trauma Care: Preparing for the Unexpected”. The keynote address “Having Difficult Conversations: “Dodging the Silver Bullet & Reducing Conflict” was delivered by Judy Clarkson, LLB. The remainder of the day consisted of a series of plenary presentations and break out sessions. There were over 200 attendees from across the province representing all aspects and phases of the trauma continuum from Emergency Medicine Service (EMS) providers to acute care bedside clinicians, researchers and rehabilitation personnel.
SMH Trauma Program is comprised of world-renowned researchers and state-of-the-art research facilities and is affiliated with the UofT, as well as the newly created Li Ka Shing Knowledge Institute and the Keenan Research Centre. Trauma-related research at SMH looks at traumatic injury in a number of different contexts, from the individual patient to community and societal issues. Some examples of the diverse foci of traumatic injury research that were published in 2011 are outlined below:

**Trauma Systems/Centres: Organization and Performance:**

**Medical Education**

**Care of Critically Ill / Injured Patients**


Other:

For any enquiries, please contact:
Trauma Services Office
30 Bond Street
3-075 Donnelly Wing
Toronto, ON M5B 1W8

E: sorvaria@smh.ca
T: 416.864.5916
F: 416.864.6015

stmichaelshospital.com

Fully affiliated with the University of Toronto