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# New Brunswick Trauma System

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## Final Report

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**HayGroup**







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Hon. Mary Schryer  
Minister of Health  
Province of New Brunswick

Madam Minister,

Please accept the final report and recommendations of the New Brunswick Trauma System Advisory Committee. This work is the product of almost 20 months of work by some one hundred people currently working in the New Brunswick Health Care System.

It is the “blueprint” for the inception of a coordinated trauma system throughout the province. Some recommendations are essential and will need to be acted upon for day one, others are future directions. Some initiatives will no doubt be able to be absorbed in the current annual budget while others will require “new money” in future budgeting by the Department of Health.

The New Brunswick Trauma System Advisory Committee’s mandate was to ensure that all trauma and related medical services in New Brunswick are co-ordinated to provide optimum care to all severely traumatized patients anywhere or anytime in our province, seamlessly and without unnecessary delay.

The New Brunswick Trauma System Advisory Committee had eight sub-committees, each vested with responsibility to review current and needed resources (human, capital and operating) in select areas.

- 1 1-800 Number
- 2 Pre Hospital Care
- 3 Trauma Prevention
- 4 Non Medical Human Resources
- 5 Medical Human Resources
- 6 Data Collection
- 7 Rehabilitation
- 8 Policy and Procedures (not yet formed, and will be part of the system construction)

Work was expedited with parallel production in the seven areas above and subsequent plenary construction of the final report with all members participating and cross-referencing their expertise and experience.

New Brunswick is faced with a challenge of a singular nature in that our population is relatively small and major secondary and tertiary health services are divided among three cities and four larger hospitals, all in the south.

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Implementing a seamless New Brunswick trauma system will take considerable direction, effort, co-operation and resources. We suggest the permanent New Brunswick Trauma System Advisory Committee will need to be established as soon as possible. It will have to work collaboratively with the new trauma director, Region "A", Region "B" and the Department of Health.

With respect Madam Minister my suggestion to the Department of Health is to have the permanent structures for governance set in place early in 2010. I suggest the members will need to come from inside our health system, or from the committee that I chair currently. I recommend this approach because these people possess the expertise needed for the continued direction that will be needed as the trauma system is implemented. A chairperson of the committee will need to be selected expeditiously.

Madame Minister, I would also like at this time to compliment the exemplary work of your department, especially Mrs. Mary O'Keefe Robak, Mrs. Ruth Lyons, Mrs. Lise Daigle and Mrs. Roberte O'Regan. Also, I want to state that the commitment and advice and leadership of Dr. Isser Dubinsky and Dr. Murray Girotti, was superlative. The members of my committee were an encyclopedia of knowledge and represented centuries of experience.

Madame Minister, I thank you on behalf of all the members of my committee for the opportunity to work for all New Brunswick citizens.

Sincerely,

Dr. Dennis Furlong, B.P.E., M.Sc., B.Med.S., M.D., D.C.L, LL.D.  
Chairman, New Brunswick Trauma System  
Advisory Committee

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# 2 Acknowledgements

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The recommendations put forward by the Trauma System Advisory Committee are the result of the hard work of numerous individuals who contributed their time, knowledge and expertise.

I would like to thank the following individuals for their contributions:

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- Tom Raithby
- Tracey Newton
- Travis Quigley
- Vicki Squires





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# 3 Executive Summary

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Dear Minister:

In the report that follows, the Provincial Trauma Advisory Committee identifies a comprehensive approach to the development and implementation of a Provincial Trauma System for the province of New Brunswick.

The report is a culmination of a process that began with the review of the case of a 67 year old gentleman conducted by Hay Group in 2006, leading to a subsequent process also conducted by Hay Group, which reviewed the province's capacity to provide high quality care to trauma patients. Consequent to that review, under the aegis of the Provincial Trauma Steering Committee, eight sub committees have been engaged in annotating the province's current resources to provide an integrated, timely, high quality response to trauma. These committees have had an array of mandates ranging from examining the pre-hospital sector to the information technology and human resource supports available in the province, and in all cases, have made recommendations to address existing and anticipated future gaps between the currently available resources and the predicted needs using a best practice approach.

The report identifies a total of 112 recommendations that are listed below. Where the subcommittees were able to identify those suggestions that must (i.e. are essential to have acted upon before declaring the system functional) and should (i.e. implementation may be deferred) be implemented, we have provided that information. In addition, readers should note that where appropriate, consultant comments have been added to recommendations. These are included in the body of the report.

In the appendix to this report, with the assistance of the consultants, we have identified all those strategies and policies that are essential to have in place in order to "open" the system, and those that may be deferred. The latter are categorized according to suggested timelines for implementation. In some cases, the recommendations made by the subcommittees have been "grouped" and those felt to be overlapping have been merged into one recommendation. Wherever possible, we also provide rough estimates of the cost of implementation.

The Trauma Advisory Committee wishes to express its specific thanks to the many individuals from across the province that have worked so diligently to prepare this report, and the representatives of the Department who have been invaluable in coordinating and supporting the activities of the committees.

**Recommendations include:**

- 1 Current response time standards for land ambulances are applicable to Trauma response, and are endorsed as the standards that should be adhered to in New Brunswick.
- 2 All paramedics must receive a course in basic trauma assessment.
- 3 Proposed Field Trauma Triage Guideline and attached Destination policies must be adopted.
- 4 Air New Brunswick, in collaboration with the provincial Trauma Registry and the RHAs, should implement changes to its databases to permit capture of diagnoses and acuity levels of patients on inter-facility transfers.
- 5 Policies must be implemented to ensure the availability of an appropriately qualified escort to enable timely and safe inter-facility transfers. Advanced Care Paramedics should be deployed as soon as possible to take over this role.
- 6 Urgent consideration should be given to the training and employment of a cohort of Advanced Care Paramedics.
- 7 Policy and procedures must be developed to ensure appropriate utilization of the Air Care resource, thus ensuring availability for trauma transfers.
- 8 Policies and procedures must be implemented at MCMC to ensure rapid and reliable coordination of air and land resources.
- 9 MCMC should implement a dedicated dispatcher for Air Care.
- 10 Chute time for Air care should be reduced to 15 minutes.
- 11 A fixed wing aircraft using a coordinated airport pick-up procedure should be the mode of long distance transport for acutely ill and injured patients. ACPs should be deployed to ensure maximum speed and efficiency for this process.
- 12 Once the Trauma System and Registry are operational, an evaluation of the potential benefits (number of calls, response times and scene response) of a rotor wing response should be conducted.
- 13 Moncton should remain the base for the air ambulance.

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- 14 NB should implement a public safety trunked mobile radio network. The solution must provide full interoperability for the Provincial Ambulance Services System, as well as inter-agency radio communications to all other public safety agencies.
  - 15 Consideration should be given to individual frequencies or talk groups for each receiving emergency department.
  - 16 The receiving hospital should only hear radio traffic pertaining to patients they will be receiving.
  - 17 For Level 1 and 2 centres, additional resources are required in order to provide for continuous on-site CT technician services. The gross estimated incremental costs are \$225K, although this amount will be offset by reduced on-call and call back costs.
  - 18 Standardized provincial CT and radiology protocols are required for the diagnostic evaluation of trauma patients. This may be achieved in a number of ways (e.g. under the auspices of the Provincial Trauma Medical Director, through a separate initiative involving a representative group of trauma surgeons and radiologists).
  - 19 As the electronic imaging system (PACS) enables exams and reports to be shared seamlessly for trauma (and other) patients, arrangements should be undertaken to ensure the continuous operation of this information system, including after-hours support. At present, local system support is limited or non-existent in after-hour and weekend periods.
  - 20 Standardize massive transfusion policies provincially.
  - 21 Implement a standardized trauma lab panel in accordance with ATLS and TAC Guidelines (see associated Infrastructure recommendation).
  - 22 A capital equipment acquisition plan should be developed specific to trauma.
  - 23 Health Human Resource planning at the macro and local levels must take into consideration the ongoing needs and the system's ability to sustain quality trauma services to meet TAC standards. Enhanced emphasis on the recruitment and retention of Medical Imaging, Lab Technologists, Lab Assistants, Respiratory Therapists and Registered Nurses.
  - 24 Approved funding must be provided for a 1.0 FTE Trauma Program Administrative Director to be located at the Level 1 Trauma Centre but who has provincial program scope. All necessary supports would be provided.
  - 25 Approved funding must be provided for 1.0 FTE Trauma Coordinator (RN4) position to be located at the Level 2 Trauma Centre. All necessary supports to be provided. A PDQ has been developed and will be forwarded to the Province. Classification to be determined.
  - 26 Based on workload and program requirements, it is recommended that an additional 0.5 RN3 Trauma Nurse position be established at the Level 2 Trauma Centre. A PDQ for this position is included in this report in draft form.
  - 27 Approved funding should be provided for Trauma Nurses (RN3) to be assigned to the Level 3 Trauma Centres but who would also have responsibility for the Level 5 Centres within a particular geographic area. All necessary supports to be provided. The positions could be designated as follows: 1.0 FTE for the following hospitals – Georges Dumont, Dr. Everett Chalmers Regional Hospital, Edmundston Regional Hospital and Chaleur Regional Hospital. As well, it is being recommended that a 0.5 FTE RN3 be designated for the Miramichi Regional Hospital.
  - 28 Funding must be provided for a Trauma Registry Manager/Analyst to be located in the Department of Health. This position is to be a non bargaining position. A PDQ has to be developed and the Data Sub-Committee has agreed to do this and forward it to the Classification Committee.
  - 29 Approved funding should be provided for three Administrative Assistants (1076) positions to be allocated as follows: one to the Medical Director, one to the Program Administrative Director to be headquartered at the Level 1 Trauma Centre in Saint John and one to support activity at the Level 2 Trauma Centre at The Moncton Hospital.
  - 30 There should be an assessment of the impact on workload for the existing Health Records Coders in each of the Level 3 designated sites to determine the resource needs to accommodate local trauma coding and data entry. Currently there is a 0.5 FTE designated resource at the Level 1 and Level 2 centres.
  - 31 All Emergency Department, ICU, Neuro ICU and Orthopedic nurses should be required to take the TNCC Course within the first year of employment.
  - 32 Attendance at ACLS should be considered mandatory for all Emergency Department, ICU and PACU Nurses.
  - 33 The pool of TNCC instructors should be increased by six to eight instructors. Specific geographic areas might include: four within the area covering Edmundston, Grand Falls, St. Quentin and Upper River Valley; four covering Campbellton, Bathurst and Miramichi.

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- 34 Translate the TNCC exam into French.
  - 35 Encourage nurses from the Level 1, 2 and 3 Trauma Centres to audit the ATLS program.
  - 36 Standardize the trauma orientation/competencies for Emergency Departments and ICUs. Update the existing Trauma Orientation manual developed by the Zone 2 Trauma Program.
  - 37 Develop and implement a standard review process for trauma competency/skill maintenance. This would include a formal sign-off process.
  - 38 Attendance at ACLS should be a mandatory requirement for Respiratory Therapists participating in the care of trauma patients within one year of employment.
  - 39 The Leads for Respiratory Therapy in each zone should explore opportunities for Respiratory Therapists to participate in Trauma Orientation and ongoing education with the Nursing staff.
  - 40 A Provincial Trauma Committee should determine the required clinical skills/competencies for all escorts including Respiratory Therapists involved in inter-facility transfer of trauma patients.
  - 41 Develop a protocol designating which patients should be transferred from an outside facility directly to the receiving ED, OR and/or ICU.
  - 42 Develop standardized, evidence based trauma protocols/policies and treatment guidelines relevant to each department within each facility that typically cares for trauma patients. Consideration should be given to the various patient conditions.
  - 43 Develop a “no refusal” policy for major trauma relevant to all trauma designated sites.
  - 44 Review and revise admission and discharge criteria for ICU trauma admissions.
  - 45 Develop standardized protocols for the immediate treatment of burns.
  - 46 Establish a case definition for pediatric trauma.
  - 47 Develop standard criteria/guidelines for transfer of pediatric trauma, spinal cord trauma, head trauma and burn injured patients.
  - 48 Develop a provincial Code Orange (external disaster) policy which is standardized and integrates the approach to managing mass casualty events, including mock exercises.
  - 49 Develop a comprehensive, provincial trauma quality improvement plan.
  - 50 Encourage research within the trauma stakeholder community appropriate to the level of trauma care provided and the community served.
  - 51 With the establishment of a Provincial Trauma Committee, ensure that services such as Social Work, Chaplaincy, Child Life, Psychology and Staff Support Systems are available to trauma patients/families.
  - 52 The Department of Health must consider designated funding to support acquisition of necessary trauma equipment.
  - 53 Review and consider equipment needs for level 1 and 2 centres.
  - 54 Convene a process to conduct an in-depth review of the necessary trauma equipment (including operating room equipment) for each of the Level 3 and 5 centres and recommend the addition or replacement of equipment based on the need.
  - 55 RHA B must continue recruiting for certified emergency physicians for the Level 1 Trauma Centre.
  - 56 The George Dumont Hospital should ensure that Emergency Physicians are trained in Emergency Ultrasound Technology and that appropriate ED ultrasound technology is acquired.
  - 57 Ensure that Miramichi Regional Hospital and Edmundston Regional Hospital have designated Medical Directors of their Intensive Care Units.
  - 58 Level 1 and 2 facilities should ensure double coverage in the Emergency Department 24 hours/day.
  - 59 ATLS training should be required and sustained for all emergency physicians practicing in Level 1, 2 and 3 facilities. In addition, all emergency physicians in Level 1 and 2 facilities should be trained in the use of ultrasound in the Emergency Department (so called FAST).
  - 60 Enhance the frequency and flexibility of scheduling educational courses currently offered to physicians in Zone 2. Ultrasound training should be provided through private sessions with courses ideally available in both official languages and CME credits offered for such courses. A process for maintaining competencies must be developed.
  - 61 Level 1, 2 and 3 facilities must have three specialties (Anesthesia, General Surgery and Orthopedic Surgery) onsite or on-call within 30 minutes, 20 minutes for general surgeons.
  - 62 ATLS training for anesthesia, general surgery and orthopedic specialists in Levels 1, 2 and 3 facilities as well as ultrasound training is recommended.
  - 63 Address the gap in “second call physicians” in several Level 3 and Level 5 facilities.

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- 64 Criteria for Trauma Team Leader should include: certification as an ATLS provider; ultrasound training; post graduate training in anesthesia, a surgical specialty, critical care or emergency medicine;; interest in the provision of trauma care; demonstrated leadership skills and a willingness to supervise residents and participation in research studies pertaining to trauma care.
- 65 Determining the availability and interest of physicians to participate as TTL be deferred to the next phase of development of the Provincial Trauma Program.
- 66 While both MCMC and Telecare meet the requirements to be the 1-800 call centre, MCMC is identified as the preferred system due to its ability to initiate transportation (placing resources on standby or redirecting resources based on real time viewing capability) and their long standing experience in making conference calls between facilities and medical staff.
- 67 All Level 1, 2 and 3 facilities must have a Trauma Team Leader (TTL) on call 24 hours per day and the Trauma Control Physician (TCP) or TTL readily available at all times. For Level 1 facilities, the TCP should also be the TTL. The TCP should not have any other professional commitments while on call and would not be "hands on" in trauma cases. TTLs in Level 2 and 3 facilities should have a backup person to cover as TTL if they are not readily available. Additionally, the province should implement a no-refusal policy within the province and establish formal agreements with other provinces such as Quebec and Nova Scotia.
- 68 The system operator should be required to have minimum levels of education and skills and have basic knowledge of medical terminology related to trauma.
- 69 Develop an audit system that monitors specified performance parameters and captures the frequency of and reasons for incidents and exceptions.
- 70 Establish a provincial injury prevention committee that will meet regularly and report to the Department of Health.
- 71 Create a provincial centre responsible for injury prevention and control.
- 72 Implement the Injury Prevention Strategy developed by the Department of Health, Primary Health Care Branch.
- 73 Each health zone should have a dedicated injury prevention resource.
- In the Level 3 sites there is opportunity to expand the role to include education, data collection, quality improvement and prevention.
  - It is recommended that there be additional funding for a 0.5 RN(3) prevention position in the Level 2 site immediately and in the Level 3 sites within a year of the Trauma System implementation.
- 74 The Provincial Injury Prevention Committee, Trauma Coordinators and Zone Resources should have access to current local and provincial data.
- 75 Based on best practice and injury prevention programs, it is recommended that the following programs be available in all health zones in the province:
- National Injury Prevention
  - Falls Prevention Curriculum
  - P.A.R.T.Y. Program
  - SAFEKIDS
  - Senior Safety
  - THINKFIRST
- 76 The Provincial Injury Prevention Committee advocate for legislative and public policy initiatives that have been implemented in other provinces and countries as well as monitor and communicate policy changes made in the interest of public safety.
- 77 The Provincial Injury Prevention Committee should review and communicate provincial injury data to increase awareness of changing injury patterns and trends.
- 78 Develop a communication strategy to enhance communication and public education about injuries and risks.
- 79 Adopt the Comprehensive Data Set from the National Trauma Registry.
- 80 After 1 year a) add data from the level 3 centres and b) consider adding data from the coroner's office in the PTR.
- 81 Work with Health Emergency Management Services (HEMS) to provide GEO codes to coders.
- 82 The Provincial Trauma Registry be owned and reside within the Department.
- 83 The software called "Collector" should be used to capture data.
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- 84 Facilities collecting data must follow the same data submission deadlines as the DAD thus ensuring access to data throughout the year.
- 85 The Department should process all data requests in a timely manner at no cost to provincial participants.
- 86 The Department should develop guidelines for coders to ensure consistent data collection and data quality.
- 87 The Department, in collaboration with the Trauma Program Director, must support coding by developing:
- templates to collect trauma data or charts for trauma patients; and
  - standardized forms/templates for transfers including a checklist; and monitoring implementation of approved templates in participating facilities.
- 88 Participate in the CIHI National Trauma Registry (NTR).
- 89 Develop a Provincial Trauma Registry (PTR) which will feed into the NTR.
- 90 Implement a Web-enabled Collector solution through a provincial license with a central site “Web Collector” repository at the Department.
- 91 The Provincial Trauma Registry (PTR) should initially include cases with an ISS greater than 12.
- 92 The PTR should expand after one year to include qualifying cases from level 3 trauma centres and new data elements identified as necessary based on continuous evaluation and opportunities to improve the trauma network. Consideration should be given to collecting cases with an ISS above 9 and penetrating wounds.
- 93 The Department must provide the Provincial Trauma Director with information on trauma transfers out of province annually.
- 94 During the first year, a process should be established to ensure the Department receives notification from the Chief Coroner’s office for all non- intentional deaths within 24 hours and for the Registry Manager to review case records twice a year.
- 95 The Department must hire a full time bilingual Trauma Registry Manager/Data Analyst this fiscal year.
- 96 The Department must include training for trauma coders in the Department data quality initiative budget.
- 97 The Trauma Registry Manager/Data Analyst will:
- be a resource to nurse reviewers;
  - be part of the permanent trauma advisory committee;
  - participate on the Trauma Registry Information Specialist of Canada Committee (T.R.I.S.C.);
  - work closely with the RHA coders, data analysts and nurse reviewers to continuously improve the data;
  - work closely with CIHI to develop definitions and improve data submissions to the NTR;
  - work with the software vendor to improve the software and have an error free abstract.
- 98 Develop and implement standard trauma templates and a transfer checklist to support good documentation and data collection.
- 99 Hire the following staff:
- Nurse reviewer at The Moncton City Hospital;
  - Trauma Registry Manager/Data Analyst at the Department of Health.
- 100 Test and implement needed software in the two reporting facilities.
- 101 Implement a web-enabled Collector solution/ Central-site “Web Collector” repository to receive data at the Department. Review Collector installation at the SJRH and implement at TMH.
- 102 Fully train the coders, nurse reviewers and the data analyst.
- 103 Each Level 1, 2 and 3 hospital should have a dedicated rehabilitation unit with dedicated non-rotating staff to ensure maintenance of expertise and education.
- 104 Moncton City Hospital, Saint John Regional Hospital and Stan Cassidy Centre for Rehabilitation require an on-site physiatrist and a comprehensive array of therapists with special skills for the rehabilitation of trauma patients. In addition, rehabilitation units should support local arrangements to accommodate families of individuals with prolonged rehabilitation.
- 105 Each zone within each RHA should have a contact person familiar with rehabilitation resources to organize care and rehabilitation services for patient returning from the trauma centre.
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- 106 RHA A should hire an additional bilingual physiatrist to help coordinate rehabilitation services
- 107 External prosthetic devices should be funded in the same way as internal prosthetic devices through the implementation of a formal assistive devices program.
- 108 Comprehensive data should be collected by rehabilitation professionals including: cause of injury, age, sex, type of injury, zone of residence, language preference and area in which stabilization occurred. Future data collection efforts should focus on alcohol and drug abuse, use of seatbelt, helmet etc.
- 109 Individuals who have suffered trauma should be followed by a Trauma Coordinator to ensure that they receive appropriate services in the appropriate location.
- 110 Appropriate staffing must be available in Long Term Care facilities so that they are able to meet the complex needs of individuals with severe TBI who cannot be reintegrated into the community.
- 111 The Department should establish a Rehabilitation Expert Panel to address issues of timely and appropriate rehabilitation.
- 112 Patients who have suffered severe trauma in New Brunswick should be directed to the facility which can provide appropriate care for their injury.

# 4 Introduction

In December 2005, New Brunswick's Department of Health engaged Hay Group to review the clinical care received by a 67 year old gentleman who suffered severe multiple trauma in a head-on motor vehicle accident. The review was requested because of concerns expressed by the patient's family regarding the extended period of time between the accident and transfer to a definitive referral centre. The review resulted in 29 recommendations, briefly summarized below. The report was presented to the Minister of Health in January 2006 and is available in its entirety as a separate report.

- A) Enhancements to pre-hospital processes and care including:
- an enhanced air transport system
  - recognition of the advanced level paramedic designation
  - reconfiguration of ambulance crews to ensure the presence of advanced level paramedics to respond to 911 calls
  - timely provision of trauma related interventions, ideally in a centre capable of managing the entire spectrum of patient injuries.
- B) Clear structures, processes and protocols to ensure the timely and appropriate treatment and disposition of critically ill and injured patients, including:
- establishment of a "one number to call" system to facilitate emergency transfers of trauma patients
  - a second call physician roster in all emergency departments
  - up to date certification or education in advanced trauma support for all emergency physicians
  - cross training of radiology technicians in hospitals that have CT scanners to ensure their ability to perform CT scans for trauma patients.
- C) Clearly articulated expectations and responsibilities for on-call surgeons, including:
- awareness and understanding of the appropriate management and disposition of traumatized patients by locum surgeons
  - arranging and communicating alternative coverage when a specialist on the trauma team is occupied
  - consideration of the consolidation or rationalization of orthopaedic surgery services in the northern part of the province to ensure 24 x 7

availability of a "team" capable of delivering those services necessary to support trauma care.

- D) The development of a comprehensive trauma system including:
- a 1-800 number to call system
  - a system that ensures images are directly available to radiologists, either locally or in another centre by PACS or other modalities
  - trauma triage guidelines
  - trauma centre(s) with designated levels of responsibility based on the available resources as outlined by the Trauma Association of Canada
  - human resource plans focused on the provision of trauma care (including clinical, research and teaching) such as trauma teams, trauma coordinators, trauma team leaders, and a provincial medical director
  - adequate human and fiscal resources
  - standardized charts for all trauma patients
  - an explicit commitment from medical staff (not just trauma specialists) to ensure coverage and support for the clinical service.
- E) Guaranteed access to operating rooms and adequately staffed critical care resources in Moncton City and St John Regional Hospital for trauma referrals.
- F) Integration of the Stan Cassidy Rehabilitation Centre into the trauma program to serve as a guaranteed resource for the long term rehabilitation of trauma patients.
- G) A commitment from the Department of Health and Wellness to provide adequate funding of a comprehensive trauma program, including ongoing monitoring and evaluation as well as public education and prevention strategies.

Upon receipt and careful consideration of the January 2006 report, the Department of Health and Wellness asked Hay Group Health Care Consulting to elaborate on its initial findings, determine the resources currently available for the treatment of seriously injured trauma patients, and the additional infrastructure, fiscal support and clinical support necessary to establish and support a high quality provincial trauma system that would be accessible to all residents of the province.

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The project included a comprehensive analysis of: (then) current human and capital resources and support services, a review of various structures, policies, procedures, processes and best practices, job descriptions, skill level and training of pre-hospital care providers and other relevant documents and data.

The review of data was followed by on-site visits, interviews of hospital appointees, members of the pre-hospital care system, those involved in the management of the air transport system and representatives from the Stan Cassidy Rehabilitation Centre.

A final report, submitted to the Minister in April 2007 included 54 recommendations. A summary of the report's findings is presented below and is available in its entirety as a separate report. Recommendations included:

- Development of a provincial trauma system for New Brunswick, ideally with arrangements for support from neighbouring provinces in case of mass casualties or other overwhelming circumstances, including the provision of care by certain sub-specialities that are unavailable in New Brunswick.
- Provincial investments in preventative strategies such as legislation prohibiting the use of cell phones while driving, a minimum age for the operation of ATVs and snowmobiles, laws governing the consumption of alcohol and the use of protective equipment by drivers of such vehicles. It was also recommended that a provincial leader or coordinator be appointed to implement and evaluate injury prevention programs as part of the trauma program.
- The establishment of specific processes and policies for the pre-hospital management of trauma patients including: trauma triage guidelines and destination policies, use of dispatch guidelines, standardized training for all paramedics, additional advanced training for paramedics who have already achieved PCP level competency and, where possible, deployment of said paramedics to defined major trauma patients; on-going trauma related education and quality improvement activities for paramedics and dispatchers; time standards for access to trauma patients, on-scene time and transport time guidelines; integration of pre-hospital data into provincial trauma datasets; and establishment of an independent pre-hospital medical authority to oversee the development, implementation, maintenance and quality improvement of the skills, protocols and agreements outlined above.
- Identification of one hospital as the provincial trauma resource that would, among other responsibilities, be expected to host, create or provide supporting structures, processes and resources for the management of severely injured trauma patients

including: a medical director for the trauma program, support from a full time data assistant/analyst, and sufficient nursing resources in the Emergency Department to provide care to a higher volume and acuity of trauma patients. The provincial resource would also be required to have a "no refusal" policy and an active role in the province-wide inter-hospital transfer of trauma patients including the "one number to call system". The designated facility would also assume a leadership role in the development and dissemination of a province wide trauma-related continuing professional development program.

- Designation of selected centres as level 2 or 3 trauma centres with on site availability of an ED physician, sufficient ED nursing staff, a call schedule that ensures availability of selected specialists, adequate lab and DI personnel and the availability of at least four units of O-negative blood at all times. The report also called for a clear articulation of the role of all hospitals in trauma care. Hospitals were to ensure the provision of up-to-date information on the names and contact details for on-call staff providing trauma care to the trauma centre. Individual hospitals would be required to ensure clearly identified and publicized membership of the trauma team at all centres.
- That services should be available in both official languages.
- Hospitals treating trauma patients should ensure specified levels of competency and resources for the care of trauma patients including: defined competencies for ED physicians including ATLS, appropriate education and training in assessment and treatment of trauma patients for ED nurses and RTs involved in the management of trauma patients, sufficient nursing staff to facilitate timely transfers, and a second on call physician.
- Mandatory participation in data collection and reporting activities for the provincial reporting system as well as participation in province wide trauma related education and quality assurance programs.
- Development of a comprehensive transport infrastructure including: enhanced air transportation, (perhaps shared with PEI, Nova Scotia and other regional partners), a "one number to call" system to ensure an integrated inter-facility transfer response, paramedics with advanced care skills for inter-facility transfers and response to 911 trauma calls and a provincially funded medical authority (integrated with the 911 system and air ambulance medical authority) to provide leadership and oversight for the trauma response system.
- In-patient rehabilitation (as required) for all traumatic brain injury patients, spinal cord injured patients and multiply injured patients at the Stan Cassidy Centre.



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- Establishment of a provincial trauma care steering committee; province wide protocols for trauma triage, hospital by-pass and provision of pre-hospital care for trauma patients; and a provincial trauma registry with comprehensive data collection for patients with an Injury Severity Score >12.

Subsequent to the receipt of the report, the consultants were asked to support Department working groups and the provincial Patient Safety and Clinical Collaboration Committee in their efforts to ensure the successful implementation and integration of the above report.

Initially, a Trauma System Advisory Committee was struck to advise the Patient Safety and Clinical Collaboration Committee on the strategies to achieve this goal. Dr. Dennis Furlong, a Family Physician and former Minister of Health for the province, was asked to chair the committee. Membership was drawn from each of the regional health authorities and included representatives from medicine, nursing, and administration as well as the provincial Department of Health.

The committee was vested with responsibility for developing a methodology to evaluate the Hay report and determine which recommendations should be acted upon. Drs. Isser Dubinsky of Hay Group and Murray Girotti, an experienced trauma surgeon and Chair of the Province of Ontario's Trauma Advisory Committee were invited to serve as advisors to the Steering Committee.



## 5.1 Designation of Trauma Sites

The initial undertaking of the Trauma System Advisory Committee was to establish a methodology to determine the appropriate designation of each hospital in the province for its contribution to trauma care. As the Hay report had been written prior to the most recent revisions to the Trauma Association of Canada (TAC) guidelines for the designation of trauma centres, it was deemed appropriate, and necessary, to disseminate the most recent iteration of the guidelines to all hospitals in the province. These guidelines identify the characteristics of trauma centres, defined as level 1 to 5, according to the available infrastructure and support services. Importantly, the guidelines also recognize every institution in a province has a role to play in trauma care, and that the exercise of designation should be designed to provide concrete standards and guidelines to individual institutions as to the necessary infrastructure, while also providing explicit understanding across the province of the role of each centre in the provision of trauma services.

Each site was asked to evaluate its desired contribution to trauma care, and to compare this with its existing resources. This would assist the hospitals in determining the most appropriate role for the institution, based on the resources available. As part of the process, hospitals were also asked to deliberate their “desired” contribution to the trauma system, as it was felt appropriate for hospitals to be provided with the opportunity to absent themselves from trauma care, should they wish to do so.

When the process was completed, only the Saint John Regional Hospital, at that time located in region 2, was found to meet all the requirements for designation as a level 1 trauma centre. Similarly, the Moncton City Hospital was the only hospital in the province able to meet the requirements for designation as a level 2 centre. Several hospitals felt that they met the criteria and wished to be recognized as level 3 centres. There were no centres deemed appropriate for level 4 status, while several were self-evaluated as appropriate for level 5.

The steering committee reviewed the hospitals’ level of self designation, and felt, according to the Trauma Association of Canada guidelines, the hospitals had, in fact, arrived at an appropriate designation. The only concern expressed focused on the designation of hospitals in Bathurst, Campbellton, and Miramichi as level 3 centres. Concern focused specifically on the lack of guaranteed 24/7 availability of orthopaedic surgery coverage at each of those sites. It was suggested that one of three models could address the concerns.

In the first iteration, one or all of the hospitals could agree to transfer its orthopaedic surgery program to the remaining site(s), thus providing 24/7 coverage at the remaining site or sites.

A second alternative would be to develop a model in which the orthopaedic surgeon, general surgeon, and anaesthetist were on call on the same night on a rotational basis amongst the three hospitals, with one of the three centres being the designated receiving centre on that specific evening.

A final alternative would be to recruit sufficient orthopaedic surgeons to all three sites to guarantee the availability of orthopaedic surgery coverage at all three sites on a 24/7 basis.

Subsequent to this discussion, some sites sought re-designation as level 5 centres. The discussion of the coordination of orthopaedic surgery service in the northern part of the province continued, and final resolution will be discussed in later sections of this report (Chapter 8, pg. 29).

## 5.2 Subcommittee Meetings and Recommendations

In the early stages of its deliberations, the New Brunswick Trauma System Advisory Committee (TSAC) decided to establish eight subcommittees to provide advice and direction on the successful implementation of distinct components of a trauma system. The eight subcommittees are listed below:

- Pre-hospital Care
- Hospital Human Resources (non-physicians)
- Hospital Human Resources (physicians)
- 1-800 Trauma Line
- Trauma Prevention Design
- Policies and Procedures
- Trauma Data
- Rehabilitation

Each subcommittee had terms of reference developed. The proposed terms of reference were reviewed and revised by the Steering Committee before being finalized. It was determined that the membership of the subcommittees should reflect the terms of reference in order to maximize the quality of the deliberations.

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One of Dr. Dubinsky or Dr. Girotti was assigned to each of the above committees to serve in an advisory role. It was agreed that they would attend all the committees' meetings, and facilitate committee discussions by sharing their experiences, or referring them to existing agencies in other provinces which had dealt with many of the issues that the committees would confront.

To ensure broad provincial representation, both in terms of the geography of the province and the appropriate professional disciplines, the steering committee discussed and then suggested membership for each subcommittee. The subcommittees were struck to represent both urban and rural centres and the array of disciplines whose practices would be affected by the recommendations of the subcommittee. Each had a chairperson assigned who was a member of the Trauma Services Advisory Committee, in order to ensure communication with the services advisory committee.

In addition, where appropriate, the provincial trauma director and the provincial trauma medical director were designated as members of the committees, although neither of these individuals had been appointed.

Initially, it was hoped that these individuals would be appointed early in the process, and once their appointments had been confirmed, they would be able to participate in the work of the subcommittees.

To facilitate the search for a provincial medical trauma director, a search committee was established. As it was agreed that the provincial medical trauma director would have his or her clinical appointment at the St. John Regional Hospital, the chair of the search committee was initially the Vice President of Medical Affairs at that institution.

In order to facilitate the search, it was decided to contract with a professional search firm (Ray and Berndston) to conduct a national search.

As the Hay Group report had recommended that it was essential to ensure the system operated in both official languages, discussion of the level of language fluency necessary ensued. In order to ensure objectivity and transparency, consultation with the province's language officer was arranged during one of the committee's early meetings. At that time, it was determined that there was no official intra-provincial designation of language fluency, but that, according to federal guidelines, it would be necessary for the individual chosen for the role to be fluent at the level 3 designation.

This information was then conveyed to the search firm, in order to enable them to better find appropriate candidates for the provincial medical director role. It was agreed that as candidates were identified, all would be asked to demonstrate their proficiency in both official

languages, and be evaluated by the province's language officer.

The role of the director of the provincial system was to be defined by the province's Department of Health, and a recruitment and compensation model compatible with the province's other hiring practices for senior administrative roles was to be used.

It became evident that neither the provincial director nor the provincial medical director positions would be filled in the near or immediate future, and that it would be necessary for the committees to continue their work in the absence of these representatives. It was, however, recognized that once appointed, these individuals might seek to further revise the work of the subcommittees.

In March 2008, Honourable Michael Murphy, Minister of Health in New Brunswick at the time, announced several important structural changes to the organization and delivery of healthcare services. On September 1, 2008 the eight former regional health authorities were consolidated into two new organizations: Regional Health Authority A (RHA A) and Regional Health Authority B (RHA B). In view of these structural changes, the Provincial Trauma Steering Committee directed the reconfiguration of all eight sub-committees to ensure that members of sub-committees better reflected the structure and organizational leadership of the newly formed Regional Health Authorities. As such, the Provincial Trauma Subcommittees were reorganized.

Many members of the provincial steering committee were no longer in the previous roles, and thus had to be replaced. In addition, several of the chairperson's of the subcommittees had also departed from their roles, necessitating the recruitment of new chairs. Furthermore, with the consolidation of the number of regional health authorities to two, the subcommittee membership was altered to ensure at least one representative from each RHA, with additional members recruited based on their experience or expertise in areas that pertained to the subcommittee mandates.

Each subcommittee was chaired by a member of the reconstituted NB Trauma System Advisory Committee and all subcommittees had representation from the Department of Health and Zone 2. Expert advice from Dr. Isser Dubinsky and Dr. Murray Girotti was to remain available to subcommittees as requested.

Terms of Reference for each subcommittee were reviewed, owing to the interval between the time the committees had been originally struck and the revisions to the regional health authority model. Once the terms of reference had again been finalized, each subcommittee was asked to present its recommendations to the New Brunswick Trauma System Advisory Committee by June 2009.

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It was recognized that it would be prudent and necessary for an intermediate committee to review the recommendations of the subcommittees in order to determine which, in fact, would be necessary in order to ensure a highly functioning trauma system. In addition, it was recognized that it might be necessary to “triage” the recommendations to determine which needed to be addressed before the trauma system could “officially” begin its work, and which recommendations would need further deliberation or discussion, but not necessarily implementation, prior to the trauma system commencing its operations.

It was also seen as important to have a committee vet the recommendations in order to determine what, if any, structural, policy, or regulatory implications might arise as a result of the recommendations of the subcommittees and to annotate these and bring them to the attention of the Department of Health and the provincial government. Thus, a Policies and Procedures committee was designated, with membership to be decided at a future date, but to include, at a minimum, both the medical and administrative provincial directors. The role of the Policy and Procedures committee was seen to begin after the receipt and discussion of all the subcommittee reports, and it was perceived that this committee would be a long standing committee with oversight responsibility for the provincial trauma system, once established. A brief summary of subcommittee terms of reference, memberships and high-level recommendations are presented in the chapters that follow.

### 5.3 Final Report

In the chapters that follow, the Provincial Trauma Committee has briefly summarized the subcommittee mandates as well as recommendations and associated rationale submitted by each subcommittee. Where appropriate, consultant comments have been added to recommendations. The complete terms of reference, committee membership and subcommittee reports are available as separate reports.



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# 6 Pre Hospital Care Subcommittee

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At the time of the original review of the case, and the commencement of the Hay Group design of the provincial system, pre-hospital care services in the province were fragmented. They were composed of an array of volunteer and professional services, operated, in some cases, by regions and in others by hospitals. Standards of care and training were established locally and not provincially. As a separate exercise, while the province had been engaged in deliberations on the establishment of a provincial trauma service, it was also evaluating the ambulance system. In fact, proposals for the operation of a province wide system had been sought. At the end of that process, all ambulance operations were consolidated under the auspices of Medavie Blue Cross.

This resulted not only in changes to the membership of the pre-hospital care subcommittee to reflect the new operator of the system, but also the need to integrate the operator's strategic view of the reconfigured pre-hospital care system in the province with the subcommittee's terms of reference and the Hay Group recommendations.

The pre-hospital care Subcommittee was mandated to review plans for trauma care by the provincial ambulance service and ensure that there were adequate and appropriate supports for the trauma program and its patients. The deliberations of this committee included: potential enhancements to the current air transport system; the potential role for advanced care paramedics; trauma education for pre-hospital care providers; proposed communication tools; proposed triage guidelines and bypass protocols; identification of appropriate response times; and the anticipated volume of secondary transfers and the required infrastructure to support these transfers.

The committee undertook a comprehensive review of current systems, structures and resources and examined the role of Advanced Care Paramedics (ACPs) in the Emergency Medical Services (EMS) system; use of fixed wing and rotary wing (helicopter) aircraft and supporting communication, policies and procedures; use of field trauma triage guidelines and destination protocols etc. The committee identified 16 recommendations that are summarized below.

**Response Times:** Current established standards for Ambulance New Brunswick, defined and enforced contractually, specify a response time of less than nine minutes, 90 percent of the time in urban areas and less than 22 minutes 90 percent of the time in rural areas. Calls are prioritized through a recognized set of protocols known as the AMPDS card system. These standards were

compared to other jurisdictions for appropriateness and similarity and were found to reflect national standards.

**Recommendation 1:** Current response time standards for land ambulances are applicable to Trauma response, and are endorsed as the standards that should be adhered to in New Brunswick.

**Training of Pre-hospital Care Providers:** Citing the OPALS study, the committee noted improved rates of survival for patients receiving basic trauma life support in the pre-hospital phase. While these skills are within the scope of the Primary Care Paramedic (PCP) and virtually all paramedics in the province have this designation, it was noted that there is significant variation within the current cohort of paramedics as it relates to training (accredited/non-accredited, grandfathered into designation), years of experience and "comfort" in managing trauma.

**Recommendation 2:** All paramedics must receive a course in basic trauma assessment.

**Field Trauma Guidelines and Destination Policies:** Early in the history of trauma care, it became evident that there was a "golden hour" in which it was necessary to ensure that certain life or limb saving interventions were delivered. It was recognized that it would serve the interest of trauma victims to "bypass" the closest hospital and be transported directly to centres where these interventions could be delivered if such centres were within 60 minutes of the incident scene. Additionally, it was recognized that patients whose trauma episode met certain incident (e.g. high speed crash, falls from a certain height, etc.) or physiologic characteristics (e.g. shock in the post incident phase) were statistically more likely to need the resources of a specialized trauma facility. As a consequence, field trauma triage guidelines needed to be developed to provide guidance to pre-hospital care providers on the most appropriate site to which trauma patients should be transported, in order to ensure, where possible, they reach a centre with the necessary resources (human and infrastructure) to provide definitive care for life threatening injuries within one hour. There are several field triage protocols that have been described in the literature and subsequently used to aid paramedics to make decisions quickly and reliably in the field. The committee has proposed a Field Trauma Triage Program that is consistent with the current pre-hospital literature and standards of practice.

**Recommendation 3:** Proposed Field Trauma Triage Guideline and attached Destination policies must be adopted.

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**Secondary Transfer of Trauma Patients:** The ambulance workload associated with trauma care is not limited to the transfer of patients from the accident scene to hospitals. It also includes secondary transfers (the transfer of patients from the initial treating hospital to a definitive care centre). At present, New Brunswick's ambulance and dispatch databases do not capture information on patient acuity and diagnoses of inter facility transfers (IFTs), and as a consequence it has not been possible to quantify the total trauma associated workload. Based on air ambulance data, it is estimated that the secondary transfer of trauma patients comprises 3.8 percent of the air ambulance service total workload.

Trauma patients requiring inter-facility transfers require a level of care that cannot be provided by PCP's who currently staff ANB ambulances. Therefore, sending facilities have been required to send a registered nurse, respiratory therapist or physician to accompany the patient during the transfer. However, a lack of formal policies to guide decision making on the most appropriately trained individual to accompany patients on transfers and define procedures to mobilize these resources have proven to be problematic. The difficulties have included the lack of availability of second call physicians to accompany patients on transfers, limited nursing resources which minimize the capacity of a hospital to "spare" a nurse, the extended length of time which nurses who accompany patients on transfers spend out of the sending institution (thus generating costs for overtime and replacement), and ensuring that whoever accompanies the patient on transfers has the appropriate skill set to intervene en route should it become necessary. Advanced Care paramedics (ACPs) are commonly used in other North American jurisdictions to accompany patients on secondary transfers. They are capable of providing the advanced care required by trauma patients during inter-facility transfers, and their presence as a resource to the health-care system also improves the quality of pre-hospital care, particularly for patients suffering from severe emergencies in rural areas, where transport time can be extended, and the availability of a trained practitioner capable of providing interventions for a variety of cardiac, respiratory, and other emergencies has proven to be life-saving.

Discussions of the pre-hospital care committee also highlighted the potential benefits of an advanced care paramedic program in New Brunswick to include the guaranteed availability of a resource for secondary transfers, minimization of disruption of nursing, physician, and respiratory therapy resources in sending facilities, and potential cost savings for nursing overtime currently generated when nurses accompany patients on such transfers. In addition to their support of secondary trauma transfers, advanced care paramedics would also

have a significant role to play in secondary transfers for obstetric, pediatric, cardiac and other emergencies.

**Recommendation 4:** Air New Brunswick, in collaboration with the provincial Trauma Registry and the RHAs, should implement changes to its databases to permit capture of diagnoses and acuity levels of patients on inter-facility transfers.

**Recommendation 5:** Policies must be implemented to ensure the availability of an appropriately qualified escort to enable timely and safe inter-facility transfers. Advanced Care Paramedics should be deployed as soon as possible to take over this role.

**Recommendation 6:** Urgent consideration should be given to the training and employment of a cohort of Advanced Care Paramedics.

**Air Transfer System:** Once the need for an air transfer has been identified, a variety of logistic issues impede the maximum efficiency of utilization of the service. In the current system, all patient transfers are conducted by fixed wing aircraft. As a consequence, it is necessary to transfer the patient from the sending institution to the nearest landing strip. Trauma patients who require air ambulance transfers often have needs that exceed the scope and training of the PCPs who would normally accompany patients in ground transfers from the sending institution to the airfield. As a consequence, flight nurses have often had to leave the plane, and be transferred to the emergency department of the sending facility to assist in the ground transfer of a patient to/from the airport. This has resulted in long transfer times and reduced availability of the aircraft (In 2008, Unit hours of Utilization for New Brunswick Air Care was 0.65 compared to the industry standard of 0.40).

In addition, review of the utilization of the air transfer system revealed that a significant percentage of the air transfers were "elective" in nature. As a consequence, the availability of the aircraft for emergency transfers may be inhibited. As one of the issues which this committee addressed was the need for additional air transfer capacity (either additional fixed wing or rotary wing), the issue of the volume of emergency transfers had to be addressed. It is clear that if appropriate restrictions limiting the use of the system for elective transfers were placed on the existing air transfer system, its availability to support emergency transfers would increase significantly. The committee also noted the introduction of ACPs to facilitate low-priority transfers by land as an alternate solution to reducing utilization of Air Care.

Because of the need to integrate hospitals, land transfer capacity, and air ambulance, it was also recognized that there was a need for a designated dispatcher for air care in order to optimize the coordination of these resources.



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**Recommendation 7:** Policy and procedures must be developed to ensure appropriate utilization of the Air Care resource, thus ensuring availability for trauma transfers.

**Recommendation 8:** Policies and procedures must be implemented at MCMC to ensure rapid and reliable coordination of air and land resources.

**Recommendation 9:** MCMC should implement a designated dispatcher for Air Care.

**Speed of Dispatch for Air Ambulance:** The sub-committee noted the importance of early transfer of patients to a Level 1 trauma facility to improve survival. The committee compared current travel time (air and ground) from Northern Centres to Saint John Regional Hospital (SJRH)-the only designated Level 1 trauma Centre in the province, and noted both the necessity and the opportunity to substantially improve current air transfer times. Requiring pilots to be on-site and available at the airport would reduce chute time (wheels-up time) and, as noted above, allocating a corps of dedicated ACP transfer medics to support an airport pick up system would substantially reduce the air-transfer times to SJRH.

**Recommendation 10:** Chute time for Air care should be reduced to 15 minutes.

*Consultant's note: This will contribute to reduction in total transfer times and decrease risk. While improved coordination can begin now, it cannot be fully implemented until ACP's are in place (see #6 above).*

*Costs of implementation need to be balanced against quality improvement associated with decreased response time and an opportunity to defer on purchasing/leasing additional air craft (fixed wing or rotary). Given that "total" transport time for air transfers includes notification, mobilization of resources, flight time to the sending hospital, transfer from the sending institution to the air strip, return flight time and transfer from the air strip to the receiving hospital, total transfer time will remain, at a minimum, three hours. Most life saving interventions in trauma must be instituted within the "golden hour" after the injury. Thus, decreasing chute time will not result in significant decreases in mortality. Conversely, it will be necessary to ensure that life saving interventions such as airway management, drainage of a tension pneumothorax or control of exsanguinating haemorrhage occur at the site that first treats the patient.*

*Bearing in mind the significant annual operating costs entailed in lowering chute time to 15 minutes, it is suggested that ensuring the availability of resources to treat immediate life threatening injuries is the preferred approach.*

**Recommendation 11:** A fixed wing aircraft using a coordinated airport pick-up procedure should be the mode of long distance transport for acutely ill and injured patients. ACPs should be deployed to ensure maximum speed and efficiency for this process.

**Use of a Rotor Wing System:** The Hay Group report indicated that the province should consider the acquisition of rotary wing aircraft to facilitate trauma transfers. Postulated advantages included direct scene to hospital transfers and the potential for direct hospital to hospital transfers without the need for transport to and from a landing strip. The subcommittee examined the feasibility of purchasing a rotor wing system for New Brunswick's Trauma Response System. The committee examined response times, aircraft/helicopter availability (affected by maintenance and weather), as well as operating and structural improvement costs (such as the need to build helipads) and concluded that adding a rotor wing system would require significant capital and operating dollars. It was also recognized that helicopters would be more likely to be unavailable due to maintenance/inclement weather and would offer minimal improvements in air transfer times, particularly if improvements in existing transfer times as suggested in other sections of this report were made.

However, the committee did recognize that there is a lack of sufficient and accurate data at the current time to definitively rule out the need to purchase a rotary wing aircraft in the future. It will be necessary for the trauma data repository, once developed, to have the capacity to report on the potential volume of scene rescues in order to accurately determine the potential benefits of a rotary wing system.

**Recommendation 12:** Once the Trauma System and Registry are operational, an evaluation of the potential benefits (number of calls, response times and scene response) of a rotor wing response should be conducted.

**Recommendation 13:** Moncton should remain the base for the air ambulance.

**Communication Systems:** The Province's Integrated Radio Communication System (IRCS) currently used for communication between Medical Communication and Management Centre (MCMC) and ambulance units in New Brunswick is a legacy system with outdated technology, issues with replacement parts, limited service guarantees and significant radio interoperability limitations between agencies. This has resulted, among other phenomena, in pre-hospital care providers experiencing difficulty communicating with the base hospital when conducting scene extrications, and concerns regarding the ability to efficiently and effectively coordinate disaster responses between and

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amongst a variety of agencies such as ambulance, police and fire. Virtually every other province has purchased or is exploring a public safety trunked mobile radio network which provides full interoperability for the ambulance and the capacity for interagency communication. It is recognized that the acquisition of such systems is extremely expensive.

An additional concern with the current system is the inability of base hospitals to “filter out” communication between ambulance service and other base hospitals. This provides extraneous background noise, while conferring no quality of care benefits.

**Recommendation 14:** New Brunswick should implement a public safety trunked mobile radio network. The solution must provide full interoperability for the Provincial Ambulance Services System, as well as inter-agency radio communications to all other public safety agencies.

**Recommendation 15:** Consideration should be given to individual frequencies or talk groups for each receiving emergency department.

**Recommendation 16:** The receiving hospital should only hear radio traffic pertaining to patients they will be receiving.

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# 7 Hospital Human Resources (Non Physician Group) Subcommittee

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The non-physician hospital human resources committee was given a mandate to review the availability of laboratory and diagnostic imaging resources (human resources and infrastructure) relevant to the provision of trauma services in Level 1-5 centres. Not only were they asked to focus on the resources, but also relevant response times (as suggested by the Trauma Association of Canada in its standards document) and minimum criteria for support services such as haematology, biochemistry and radiology.

The group was also asked to review the current level of training and knowledge specific to trauma care of nursing staff at the hospitals. Once the assessment was completed, they were also mandated to develop a plan to address the gaps. Additionally, they were asked, to review and, if appropriate (based on literature or extra provincial comparisons), augment existing job descriptions for a trauma director, data analyst and trauma coordinator.

Finally, to ensure system readiness, the committee was asked to review existing resources and infrastructure necessary to support a comprehensive trauma system such as emergency departments, operating rooms, intensive care units, respiratory therapists, surgical beds, equipment etc.

The sub-committee created individual working groups for each of the objectives to ensure a comprehensive analysis of current resources and issues. While each working group designed their own methodology and performed their own analysis, each was guided by the standards questions in the Trauma Association of Canada (TAC) guidelines. In some cases, the working groups enhanced the questions in the TAC document to ensure a better understanding of local issues. The committee put forward 41 recommendations that are briefly outlined below.

**Diagnostic and Laboratory Services:** The availability of diagnostic services sufficient for the provision of trauma care was assessed using a survey based primarily on the Trauma Association of Canada Accreditation Guidelines. Where necessary, the survey was modified to ensure that it captured additional requirements considered necessary to ensure that the working group was able to provide a comprehensive assessment of provincial diagnostic services. These modifications incorporated not only recognized national benchmarks but what the subcommittee felt were appropriate factors and considerations. Given the competing demand for finite

resources, the committee's review and was ultimately based on compliance with "essential" standards.

When compared to the standards suggested by the TAC, the working group noted two gaps in particular: a) the requirement for continuous on-site CT technician coverage for level 1 and 2 facilities and b) the lack of standard CT and radiology protocols for the care of trauma patients. In addition, the committee noted the lack of continuous diagnostic imaging technical staff coverage at Grand Manan Hospital (Level 5).

**Recommendation 1:** Level 1 and 2 centres require additional resources in order to provide continuous on-site CT technician services. The gross estimated incremental costs are \$225K, although this amount will be offset by reduced on-call and call back costs.

**Recommendation 2:** Standardized provincial CT and radiology protocols are required for the diagnostic evaluation of trauma patients. This may be achieved in a number of ways (e.g. under the auspices of the Provincial Trauma Medical Director, through a separate initiative involving a representative group of trauma surgeons and radiologists)

**Recommendation 3:** As the electronic imaging system (PACS) enables exams and reports to be shared seamlessly for trauma (and other) patients, arrangements should be made to ensure the continuous operation of this information system, including after-hours support. At present, local system support is limited or non-existent in after-hour and weekend periods.

The working group that was focused on laboratory services created a survey instrument to identify the gaps between the current availability and delivery of services at each site and that required based on the hospital's self designated level of trauma care capacity. While Laboratory Services at each hospital currently meet TAC guidelines as well as the guidelines in the 2007 Hay Group report, the working group identified three major challenges for laboratory services as regionalization proceeds.

- A) While all medical laboratories meet current trauma care guidelines, there is great variation in specific processes by zone. As the province moves forward with regionalization, there is a need to achieve standardization in policy and ensure best practice in transfusion medicine services within the RHA's at

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a minimum, but ideally across the province. This will allow consistency in expectations, minimize potential for error and reduce cross training requirements if and when technologists and assistants move between sites.

- B) The working group also identified the need to ensure sustainability of both equipment and human resources.

The committee noted that although current laboratory practices are comprehensive in their approach to equipment checks and maintenance, there are challenges for the overall allocation of funding for capital equipment. The committee noted the difficulties that hospitals encountered particularly in receiving approval for capital equipment acquisition for machinery valued between \$5000 and \$100,000. According to the committee report, the large number of such requests often results in equipment valued in this range not being purchased. There will be a need to ensure that capital equipment requests which specifically pertain to the safety of the trauma system are given priority in the early years of establishment of the system.

In addition, the committee noted the need for a strategy to meet the challenges in recruitment and retention of medical laboratory technologists and assistants as essential to protect current service delivery levels. Citing the 2002 Fujitsu report and ongoing trends, the committee highlighted the significant pressure anticipated in sustaining existing services with over 25 percent of medical laboratory technologists expected to retire over the next five years.

- C) The committee identified the Canadian Blood Services intent to move blood processing and distribution from Saint John to Dartmouth, NS in 2012 as a potential factor impacting the availability of blood products in the future.

**Recommendation 4:** Standardize massive transfusion policies provincially.

**Recommendation 5:** Implement a standardized trauma lab panel in accordance with ATLS and TAC Guidelines (see associated Infrastructure recommendation).

**Recommendation 6:** The Department of Health should develop a capital equipment acquisition plan specific to trauma.

**Recommendation 7:** That Health Human Resource planning at the macro and local levels take into consideration the ongoing needs and the system's ability to sustain quality trauma services to meet TAC standards. Emphasis should be placed on the recruitment and retention of Medical Imaging

Technologists, Lab Technologists, Lab Assistants, Respiratory Therapists and Registered Nurses.

**Trauma Human Resources Requirements:** The committee expanded their work in this area to examine not only the roles, responsibilities and job descriptions for a trauma director, data analyst and trauma coordinator but also those of trauma nurses, administrative assistants and health records coders. The working group was also asked to review the position of trauma registry manager/analyst by the data sub-committee.

In order to provide a template for the recruitment of a provincial trauma director, and conform with the hiring requirements of the Department of Health and Wellness, the committee completed a New Brunswick Program Description Questionnaire (PDQ). This was done based on a combination of their review of different program director roles in the province, suggestions in the Hay Group report and their knowledge of the role of trauma program director within the existing regional system in Saint John. A similar approach was used for the review of the Trauma Coordinator position from Zone 2.

The committee spent considerable time discussing the role of the trauma nurse. The only equivalent position in the province is currently in zone 2. Specific discussion focused on how the role and responsibility of a trauma nurse could and should best be met in the rest of the province. The discussion was informed by the role and responsibilities of the incumbent in the Zone 2. The working group recommended that a trauma nurse position, similar to that in zone 2, be created for the Level 2 centre (Moncton City Hospital).

Although the data subcommittee recommended that Level 3 facilities not be required to submit data to the Trauma Registry in the first year, this working group felt it important to have concurrent case reviews at Level 3 facilities to ensure quality care delivery and the identification and resolution of issues. The working group suggested the role of the trauma nurse should include the provision of staff education, facilitation of community injury prevention activities, and the provision of oversight to level 5 facilities.

The committee also reviewed the availability of health records coder capacity and administrative support services to support the functioning of the trauma program.

The committee agreed that the review and development of the role of a Trauma Registry manager should reside with the Data Sub-committee.

**Recommendation 8:** Approved funding for a 1.0 FTE Trauma Program Administrative Director to be located at the Level 1 Trauma Centre but who has provincial

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program scope. All necessary supports would be provided.

*Consultant's note: Necessary supports would include human resource supports (secretarial), office space, computer, and access to data.*

**Recommendation 9:** Approved funding for 1.0 FTE Trauma Coordinator (RN4) position to be located at the Level 2 Trauma Centre. All necessary supports to be provided. A PDQ has been developed and will be forwarded to the Province. Classification to be determined.

**Recommendation 10:** Based on workload and program requirements, it is recommended that an additional 0.5 RN3 Trauma Nurse position be established at the Level 2 Trauma Centre. A PDQ for this position is included in this report in draft form.

**Recommendation 11:** Approved funding for Trauma Nurses (RN3) to be designated for the Level 3 Trauma Centres but who would also have responsibility for the Level 5 Centres within a particular geographic area. All necessary supports to be provided. The positions could be designated as follows: 1.0 FTE for the following hospitals – Georges Dumont, Dr. Everett Chalmers Regional Hospital, Edmundston Regional Hospital and Chaleur Regional Hospital. As well, it is being recommended that a 0.5 FTE RN3 be designated for the Miramichi Regional Hospital.

*Consultant's note: When this recommendation was being deliberated, the consultant's view was that this position could and should be deferred until such time as the volume of trauma activity within the province was accurately determined, and a cost benefit decision could be made as to the necessity for additional individuals to subserve this role. The consultants believe that it may be possible and appropriate for the trauma coordinator and trauma nurses in the level 1 and 2 centres to achieve the stated objectives.*

**Recommendation 12:** On recommendation from the Data Sub-Committee, approved funding for a Trauma Registry Manager/Analyst to be located in the Department of Health. This position is to be a non bargaining position. A PDQ has to be developed and the Data Sub-Committee has agreed to do this and forward it to the Classification Committee.

**Recommendation 13:** Approved funding for three Administrative Assistants (1076) positions to be allocated as follows: one to the Medical Director, one to the Program Administrative Director to be headquartered at the Level 1 Trauma Centre in Saint John and one to support activity at the Level 2 Trauma Centre at The Moncton Hospital.

*Consultant's note: If the administrative assistant's role is confined to the medical director's trauma position only, and not his or her other clinical responsibilities, it is possible that one assistant may be able to meet the needs of both the medical and administrative trauma directors. It is also possible that the individual recruited to support activity at the level 2 trauma centre may be able to achieve this as a .5 full-time equivalent, depending on the ultimate volumes of activity.*

**Recommendation 14:** That there be an assessment of impact on workload for the existing Health Records Coders in each of the Level 3 designated sites to determine the resource needs to accommodate local trauma coding and data entry. Currently there is a 0.5 FTE designated resource at the Level 1 and Level 2 centres.

*Consultant's note: It is noted that, in the early iteration of the trauma system, the level 3 sites will not be submitting data to the Provincial Trauma Registry.*

**Trauma Education for Nurses and Respiratory Therapists:** In order to ascertain the current capacity and skill set of nurses and respiratory therapists working in specific areas (ED, ICU, orthopedics, general surgery, neurosurgery and Post Anaesthetic Care Units) and prepare an educational plan to ensure adequate knowledge and skill in trauma, the working group developed two surveys which were distributed to the directors of each of the respective areas. The questionnaires were developed specific to each of nursing and respiratory therapy.

Nursing questions related to qualifications to work in a specific area, orientation, transition of responsibility, certification and skill maintenance. Sites that responded expressed that they have been greatly impacted by the nursing shortage and were therefore unable to recruit nurses who had one or two years of experience in general medicine/surgery and a critical care course. Most sites were accepting new graduates in areas such as ED and ICU. Sites reported similar processes for introducing a new nurse to trauma care (buddy system). In general, there was a requirement for ED nurses to obtain ACLS certification within one year of employment. Great variation was noted in orientation, educational supports, certification (beyond ACLS) and skill maintenance.

There was no consistent requirement for nurses to achieve their TNCC classification. A significant inhibitor is the lack of availability of the program conducted in French.

The questionnaire completed by Respiratory Therapists related to ED coverage plans, skill maintenance, certification, formalized orientation, and the RT role in patient transport and the OR. Survey responses revealed 24 hour onsite RT coverage at Level 1, 2 and 3 sites and

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variable coverage at Level 5 sites, with two sites (Stella Maris and Grand Manan) that had no RT coverage at all. All sites reported that respiratory therapists participated in patient transfers and that a specific process was in place to maintain required skills for airway management. ACLS and ATLS certification for RTs varied by site.

**Recommendation 15:** That all Emergency Departments, ICU, Neuro ICU and Orthopedic nurses be required to take the TNCC Course within the first year of employment.

*Consultant's note: We suggest that while it is appropriate for ED, ICU and Neuro ICU nurses to receive this training, it may not be necessary for nurses working on the orthopaedic service. As many of the skills obtained will be applicable to a wide range of patients, not only the seriously injured, the costs of training should be amortized across all programs which will benefit from the enhanced training (e.g. emergency medicine, critical care, neurosurgery etc.)*

**Recommendation 16:** Attendance at ACLS be considered mandatory for all Emergency Department, ICU and PACU Nurses.

*Consultant's note: In principle, the consultants support this recommendation as it will improve the care that patients receive. However, it applies almost exclusively to patients presenting with cardiac conditions, and is rarely applicable to trauma patients. Thus, the cost should be borne by surgery, critical care and emergency medicine programs.*

**Recommendation 17:** Increase the pool of TNCC instructors by six to eight instructors. Specific geographic areas might include: four within the area covering Edmundston, Grand Falls, St. Quentin and Upper River Valley; four covering Campbellton, Bathurst and Miramichi.

*Consultant's note: Reconsider the number of instructors necessary in light of the modifications suggested to recommendation 15.*

**Recommendation 18:** Translate the TNCC exam into French.

**Recommendation 19:** Encourage nurses from the Level 1, 2 and 3 Trauma Centres to audit the ATLS program

*Consultant's note: Registration at ATLS courses is restricted to physicians. Nurses are, however, encouraged and facilitated in their desire to attend the program as "auditors". In addition to "early" attendance, will be necessary to "reserve" spots for new recruits, retraining etc. Another benefit of the recommendation will be to provide nurses and physicians with the opportunity to "train" together, enhancing the functioning of the trauma "team".*

**Recommendation 20:** Standardize the trauma orientation/competencies for Emergency Departments and ICUs. Update the existing Trauma Orientation manual developed by the Zone 2 Trauma Program.

**Recommendation 21:** Develop and implement a standard review process for trauma competency/skill maintenance. This would include a formal sign-off process.

**Recommendation 22:** Attendance at ACLS be a mandatory requirement for Respiratory Therapists participating in the care of trauma patients within one year of employment.

*Consultant's note: As noted in recommendation 16, knowledge of ACLS is principally of benefit to the treatment of cardiac patients. The Trauma Program Committee may wish to endorse this recommendation, but the cost should be borne by medicine, cardiology or critical care programs. Will require 12 months to ensure all RT's trained.*

**Recommendation 23:** That the Leads for Respiratory Therapy in each zone explore the opportunity for Respiratory Therapists to participate in Trauma Orientation and ongoing education with the Nursing staff.

**Recommendation 24:** That a Provincial Trauma Committee determine the required clinical skills/competencies for all escorts including Respiratory Therapists involved in inter-facility transfer of trauma patients.

*Consultant's note: The Trauma Program Committee should be vested with this responsibility.*

**Infrastructure:** The committee was also asked to measure the gap between the infrastructure available for the support of trauma services and the necessary requirements for each site (according to its level of designation) when compared to the Trauma Association of Canada guidelines. The areas to be assessed included policies and procedures, capital equipment and human resources. As a consequence, a considerable amount of data was collated by the committee, much of which was submitted in free text form. The recommendations which follow are therefore numerous and variable in content.

In order to ascertain resources available for critical structure to ensure system readiness, the working group developed and distributed a survey based on applicable TAC guidelines. The survey covered applicable standards in the emergency department, intensive care unit, in-patient trauma unit and burn care. Respondents were also provided an opportunity to provide additional comments. Free text comments included comments for EDs, operating rooms, PACU, critical care, step down/

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specialty units, pediatric trauma, burn care, spinal cord injury and allied health/support services. Based on TAC standards, the following recommendations were made:

**Recommendation 25:** Develop a protocol designating which patients should be transferred from an outside facility directly to the receiving ED, OR and/or ICU.

*Consultant's note: It was recognized that some patients might most appropriately be transferred to the emergency department in order to allow for comprehensive assessment, resuscitation and stabilization prior to definitive treatment decisions, while others might, more appropriately, be transferred directly to an operating room and/or intensive care unit, depending on the clinical scenario and the opinion and judgment of the trauma control physician.*

**Recommendation 26:** Develop standardized, evidence based trauma protocols/policies and treatment guidelines relevant to each department within each facility that typically cares for trauma patients. Consideration should be given to the various patient conditions.

*Consultant's note: This recommendation emphasizes the importance of care maps and critical pathways which are standardized, and based on evidence-based, best practice approaches to care.*

**Recommendation 27:** Develop a "no refusal" policy for major trauma relevant to all trauma designated sites.

*Consultant's note: As indicated in the original Hay Group report, it is essential that a "no refusal" policy be implemented for all receiving centres in order to ensure that patients are transferred from sending to receiving hospitals with the maximum efficiency, in order to reduce potential morbidity.*

**Recommendation 28:** Review and revise admission and discharge criteria for ICU trauma admissions.

*Consultant's note: This recommendation also speaks to an evidence based, best practice approach to care. Ideally, with provincially standardized criteria, the efficiency and effectiveness of utilization of intensive care units will be optimized.*

**Recommendation 29:** Develop standardized protocols for the immediate treatment of burns.

*Consultant's note: Should be a task for the Trauma Program Committee.*

**Recommendation 30:** Establish case definition for pediatric trauma

*Consultant's note: The age definition of a pediatric patient is not consistent across the province. While both the Saint*

*John Regional Hospital and Moncton City Hospital have the capacity to care for seriously ill and injured children, it will also be necessary to develop formal transfer policies and protocols in cooperation with the IWK Hospital in Halifax, which is the regional tertiary quaternary paediatric resource*

**Recommendation 31:** Develop standard criteria/guidelines for transfer of pediatric trauma, spinal cord trauma, head trauma and burn injured patients.

**Recommendation 32:** Develop a provincial Code Orange (external disaster) policy which is standardized and integrates the approach to managing mass casualty events, including mock exercises.

*Consultant's note: Much of the planning for a provincial, system focuses on the management of a finite number of patients. While this is the most commonly encountered scenario, it is also essential to ensure that planning for mass casualty events is conducted.*

**Recommendation 33:** Develop a comprehensive, provincial trauma quality improvement plan.

**Recommendation 34:** Encourage research within the trauma stakeholder community appropriate to the level of trauma care provided and the community served.

**Recommendation 35:** With the establishment of a Provincial Trauma Committee, ensure that services such as Social Work, Chaplaincy, Child Life, Psychology and Staff Support Systems are available to trauma patients/families.

*Consultant's note: While much of the focus of this report is on the medical, nursing, health professional and technologic support for the care of the trauma victim, the committee has appropriately recognized the needs of the families of trauma victims to access an array of services to support them, as well as the impact of trauma on caregivers, who may well need access to debriefings, and longitudinal support, particularly in cases of mass casualties or other tragic circumstances, such as the paediatric deaths.*

**Recommendation 36:** Department of Health to consider designated funding to support acquisition of necessary trauma equipment.

*Consultant's note: This recommendation recognizes that in the early history of the trauma system, it will be necessary to acquire a significant amount of capital equipment, and that it would be inappropriate for requests for this equipment to "compete" with the department's other budgetary demands. Once the trauma system is fully functional, there will be an ongoing need for a system of capital equipment evaluation and acquisition which*

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*recognizes the unique and special needs for trauma care, and does not compete with the acquisition of equipment for General Hospital needs. Costs may be significant and will require setting a capital equipment replacement budget starting in year 3 of the program. The needs of the Level 1 and 2 centres should be addressed immediately, while the needs of other centres may be deferred for a short period (see recommendation 37 and 38 below).*

**Recommendation 37:** Review and consider equipment needs for level 1 and 2 centres.

**Recommendation 38:** Convene a process to conduct an in-depth review of the necessary trauma equipment (including operating room equipment) for each of the Level 3 and 5 centres, and recommend addition or replacement of the equipment based on the need.

*Consultant's note: These recommendations (#37 and 38) also recognize that in the early history of the trauma system, it will be necessary to acquire a significant amount of capital equipment, and that it would be inappropriate for requests for this equipment to "compete" with the department's other budgetary demands. Once the trauma system is fully functional, there will be an ongoing need for a system of capital equipment evaluation and acquisition which recognizes the unique and special needs for trauma care, which does not compete with the acquisition of equipment for General Hospital needs.*

**Recommendation 39:** RHA B to continue recruiting for certified emergency physicians for the Level 1 Trauma Centre.

*Consultant's note: The recommendation recognizes the importance of having a cohort of sufficient size and appropriately trained emergency physicians available, particularly in the level 1 and 2 trauma centres.*

**Recommendation 40:** The George Dumont Hospital to ensure that Emergency Physicians are trained in Emergency Ultrasound Technology and that appropriate ED ultrasound technology is acquired.

*Consultant's note: Small budget required to support the cost of an educational program. The skill will be used primarily for the diagnosis of conditions such as abdominal pain, and, as such, the burden of the cost of training should not be attributed to the trauma program.*

**Recommendation 41:** Ensure that Miramichi Regional Hospital and Edmundston Regional Hospital have designated Medical Directors of their Intensive Care Units.



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# 8 Hospital Human Resources (Physician Group) Subcommittee

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The Hospital Human Resources Subcommittee (Physician Group) was mandated to ascertain the current inventory of physicians working in emergency departments in all facilities with trauma designations and the current trauma related training within this group. They were also to identify an educational plan to address any gaps. Their mandate also included identifying second call policies for ED physicians in level 3-5 hospitals and exploring best practice for specialist availability in hospitals with level 1-3 designations and an approach to manage and optimize these resources. As with emergency physicians, they were to identify specific education needs related to trauma management within the specialist group and a strategy to address any deficiencies. They were also tasked to develop criteria for trauma team leaders in level 1 and 2 facilities, identify physicians willing to serve in this capacity and address any skill and knowledge gaps.

The committee obtained information on the physicians currently providing services to the Emergency Department with the help of Regional Health Authorities and the Department of Health Medicare Services Staff. This information was used to guide analysis of issues and inform recommendations that are summarized below.

**ED Coverage:** In examining ED Physician coverage at various hospitals, the committee identified that the designated level 1 and 2 sites did not have double coverage on the midnight shift. Additionally, most hospitals in the province do not have a formally entrenched system of “second call” which allows them to summon extra physician help in an explicit manner. As a consequence, not only are there gaps in double coverage, but there is no system in place to ensure the availability of an additional physician should it be necessary.

**Recommendation 1:** Level 1 and 2 facilities should ensure double coverage in the Emergency Department 24 hours/day.

*Consultant’s note: We suggest that this recommendation is not implementable. The volume of activity on the midnight shift in these facilities is insufficient to warrant double coverage, and there is no ED in the country, even those with higher visit volumes, which requires double coverage on the midnight shift. There should, however, be a trauma team leader on call 24 hours a day who should NOT be the individual working the midnight shift. As recommended elsewhere in this report, all emergency departments should have the capacity to mobilize additional emergency physician resources to respond to a sudden influx of*

*patients, or the need to accompany patients in transfer in an organized manner.*

**ATLS and Ultrasound Training for ED Physicians:** The committee noted inconsistent prevalence of ATLS certification of ED Physicians at Level 1, 2 and 3 facilities. While it is assumed that all emergency physicians have, at some point in time, received core education in trauma care, it is also necessary that their skills be continually refreshed and updated.

In recent years the training of emergency physicians has expanded to include the use of diagnostic ultrasound for a finite number of indications in the emergency department. While it is not, at the current time, a “standard” of practice for emergency physicians to be skilled in the so-called “FAST”, only two physicians in the province are trained in ultrasound. As the expected standard of care of emergency physicians expands over time to include the ability to provide this skill, particularly in high-volume, high acuity centres (such as level 1 and 2 trauma centres), it will become increasingly important to ensure that emergency physicians working in these centres have received the appropriate training.

**Recommendation 2:** ATLS training should be required and sustained for all emergency physicians practicing in Level 1, 2 and 3 facilities. In addition, all emergency physicians in Level 1 and 2 facilities should be trained in the use of ultrasound in the Emergency Department (so called FAST).

*Consultant’s note: The American College of Surgeons, the developers, “owners” and managers of the ATLS program, specifically caution against requiring ATLS certification as a credentialing tool and are, in fact, opposed to its use for this purpose. They do not believe that it can or should be used as a job requirement. Thus, a recommendation requiring training is acceptable, but one requiring “certification” would not be.*

*The Trauma Association of Canada requires that Level 1 and 2 trauma centres have the capacity to perform FAST. The technique can be used for a variety of conditions, not all of which are related to trauma care (e.g. diagnosis of gall stones or ectopic pregnancy). However, there is a requirement to perform a minimum number of ultrasounds per year to retain skill. It is unlikely that practitioners in Level 3 centres will achieve the target number. Before committing to training in Level 3 centres, it is important to determine if the clinical volume is sufficient to merit the cost of training.*

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**Educational Plan to address Gaps:** The committee noted that current educational and training opportunities for physicians are limited by location and frequency and that many are currently either offered only in English, or on a limited number of occasions in a limited number of venues in French.

**Recommendation 3:** Enhance frequency and flexibility of scheduling educational courses currently offered to physicians in Zone 2. Ultrasound training should be provided through private sessions with courses ideally available in both official languages and CME credits offered for such courses. A process for maintaining competencies must be developed.

**Availability of Specialists:** Current staffing of specialists at Level 2 facilities (orthopedics) and Level 3 facilities (multiple specialties, but particularly orthopedics) do not meet recommended on-site/on-call guidelines as outlined in the Trauma Association of Canada guidelines. Particular concerns focused on Moncton, where there is a cross coverage arrangement in place between the Moncton City Hospital and the Georges Dumont Hospital, with only one orthopedic surgeon providing after-hours service at both sites. It will be necessary to guarantee availability of an on-site orthopedic surgeon at Moncton City Hospital in order to comply with the requirements of a level 2 centre.

**Recommendation 4:** Level 1, 2 and 3 facilities must have three specialties (Anesthesia, General Surgery and Orthopedic Surgery) onsite or on-call within 30 minutes, 20 minutes for general surgeons.

*Consultant's note: The issue of orthopedic coverage in level 3 facilities is addressed in the body of the report. It is essential, at a minimum, that level 3 facilities have an anesthetist, general surgeon and orthopedic surgeon on call 24/7. The senior management team mandated with responsibility for hospitals in Campbellton, Miramichi and Bathurst will need to ensure that those centres seeking level 3 status have the appropriate human resource infrastructure, and a call system which is configured to meet this requirement. In the consultant's opinion, only 2 possibilities can be realistically considered. One option would be to ensure a full (minimum of 3) complement of surgeons, anaesthetists and orthopods at all 3 sites. However, it is unlikely that this can or will be achieved as the volume of elective activity is insufficient to support this number of specialists, and the low volume of trauma care provided in each centre would not ensure skill maintenance. Thus it is recommended that one centre (Bathurst is suggested) be designated as the Level 3 centre in the area.*

**ATLS and Ultrasound Training for Physicians in Speciality Practice:** The committee noted varying levels of ATLS certification of the specialists who would be providing definitive trauma care (particularly anaesthetists, orthopedic surgeons, and general surgeons) at Level 1, 2 and 3 facilities. Many of these specialists did not have training in ultrasound.

**Recommendation 5:** ATLS training for anesthesia, general surgery and orthopedic specialists in Levels 1, 2 and 3 facilities as well as ultrasound training is recommended.

*Consultant's note: See Recommendation 2 above. Ultrasound training requires not only the completion of a fixed number of ultrasounds, but also ongoing use of the skill (25 per year is the minimum). It is doubtful that any orthopedic surgeon or anesthetist will be able to comply with this requirement.*

**Second Call ED Physicians in Level 3 and 5 Facilities:** The committee found limited double coverage of the emergency department in several Level 3 facilities and no double coverage at Level 5 facilities. Additionally, only one that level 3 facility has a second call system in place, and none of the other level 3 or five facilities have such a system.

**Recommendation 6:** Address the gap in "second call physicians" in several Level 3 and Level 5 facilities.

*Consultant's note: The addition of a required second call system may necessitate a stipend for the provision of the service. The designation of a second call physician is not specific to trauma care- having a physician available to support high volumes of activity, transfers (for any reason), sudden illness or injury of the on call physician are more likely to occur.*

**Trauma Team Leader Role:** As per Trauma System Accreditation Guidelines, the committee identified specific criteria for the Trauma Team Leader (TTL) role. Selection processes for the position should ensure the physician has the requisite training and skills to participate in the resuscitation and stabilization of seriously injured patients, a commitment to maintaining these skills, and a willingness to participate in a call schedule. Individuals in this role must not be the sole ED physician on duty. If they are the on-call physician for a specialty service, then arrangements must be in place to ensure the immediate availability of a colleague to provide the "on-call" service while the specialist is involved in the care of the trauma patient. Individuals assuming this role should be appropriately compensated.

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**Recommendation 7:** Criteria for Trauma Team Leader should include: certification as an ATLS provider; ultrasound training; post graduate training in anesthesia, a surgical specialty, critical care or emergency medicine, interest in the provision of trauma care, demonstrated leadership skills, a willingness to supervise residents and participation in research studies pertaining to trauma care.

*Consultant's note: The eligibility criteria for the trauma team leader role are outlined in the report. It will be necessary to provide a stipend (in addition to the fee for service income generated) for those serving in the trauma team leader role at the level 1 and 2 centres. Owing to the anticipated small volume of patients presenting to level 3 centres, the fee-for-service revenue generated from the provision of care should suffice for income support.*

**Recommendation 8:** Determining the availability and interest of physicians to participate as TTL should be deferred to the next phase of development of the Provincial Trauma Program.



# 9 1-800 Trauma Line Subcommittee

This subcommittee was mandated to ensure the establishment of a 1-800 number (possibly linked to the receiving function of an existing telephone health services) that would be accessible to emergency departments in New Brunswick 24 hours/day. The committee was asked to define training requirements for operators receiving calls, develop a template for documenting incoming calls and standards for forwarding calls to the trauma team leader in the Level 1 centre. The team was asked to develop a model that would enable team leaders to be contacted and put into touch with initiating hospitals in less than 15 minutes and would allow the operator and trauma leaders to communicate with the pre-hospital sector on a 24 x 7 basis. Finally, the committee was asked to develop an audit tool to measure the performance of the 1-800 system.

The committee put forward four recommendations, identified the minimum requirements for the call system, developed an algorithm to identify the recommended model to ensure the system supported timely communication and identified several criteria for evaluating the 1-800 system.

**Establishment of a 1-800 Number to Call:** The committee acknowledged the essential role of a “one number to call” for an effective integrated trauma system in New Brunswick. The committee reached consensus on required criteria for an effective system. In the course of its deliberations, the committee evaluated existing systems in New Brunswick (Telecare and MCMC) based on the following criteria: secure lines with appropriate privacy policies, ability to conference calls, record calls, produce reports and an audit function. Additional criteria for the system to be successful were identified as including the capacity to provide bilingual services, support the arrangement of transportation and include a contingency plan. Of particular note, MCMC already has a significant body of experience in mobilizing transportation services and providing communication links between and among facilities and medical staff.

**Recommendation 1:** While both existing systems met the requirements above, MCMC is identified as the preferred system due to its ability to initiate transportation (placing resources on standby or redirecting resources based on real time viewing capability) and their long standing experience in making conference calls between facilities and medical staff.

*Consultant’s note: The anticipated annual volume of calls is less than 600-800 per year, and will likely*

*decrease as physicians learn how the system is to be used appropriately. Thus, on average, the number of calls per day will be approximately two and should not necessitate the recruitment of additional staff, but may require some new software or communication tools*

**Model for Communication:** The committee explored various models and algorithms to ensure that the sending physician minimized time away from the bedside of the patient while trying to arrange the transfer of the patient to the appropriate trauma centre. The committee also identified the need to ensure that one individual in the province would be receiving all phone calls from referring centres, and have the capacity to identify the appropriate receiving resource based on a patient’s clinical scenario. This individual would, therefore, need to be aware of all trauma transfers which had occurred on that day, in order to ensure that patients were transferred to centres that had residual capacity to provide trauma care. The physician, to be called the Trauma Control Physician (TCP), would also need to be provided with an up-to-date, accurate listing of the physician’s on-call in each of the receiving centres that day.

This individual would be vested with responsibility for identifying the proposed receiving centre, and providing the Trauma Team Leader and/or other care givers in that institution with information regarding the clinical status of the patient to be transferred. In addition, the trauma control physician would be the trauma team leader at the level 1 centre. He or she, in addition to triaging requests for transfer, must also be a clinical resource to the initiating hospital, and provide them with advice and guidance on clinical management issues, and have the capacity (via a PACS system) to review x-rays, CT scans, and other diagnostic imaging modalities in order to provide assistance in diagnosis and management. This will necessitate having home computers with the appropriate software. It was recognized that the trauma control physician would have to be close to, but not necessarily at (within 15 minutes) the hospital during their on-call day. He or she will also need to receive a stipend. While, ideally, the trauma control physician should be fluent in both official languages, it was ultimately decided that this could not, realistically, be a prerequisite for the role.

**Recommendation 2:** All Level 1, 2 and 3 facilities must have a Trauma Team Leader (TTL) on call 24 hours per day and both the Trauma Control Physician (TCP) and TTL readily available at all times. For Level 1 facilities, the TCP should also be the TTL. The TCP should not have any other professional commitments while on call and would not be “hands on” in trauma cases.

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TTLs in Level 2 and 3 facilities should have a backup person to cover as TTL if they are not readily available. Additionally, the province should implement a no-refusal policy within the province and establish formal agreements with other provinces such as Quebec and Nova Scotia.

*Consultant's note: While the TCP should not be the sole provider of care in the hospital for his or her discipline, it would be acceptable for this individual to engage in other commitments if there was a designated, appropriately trained individual readily available to assume the TCP role if he or she were engaged in other activities.*

**Training Requirements and Questionnaire for the Call System Operator:** The committee discussed the role of the call system operator. It was decided that the principal role of the operator would be to receive sufficient information from sending physicians to provide the trauma control physician with a "snapshot" of the patient's history and clinical condition. The operators' next task would be to facilitate dialogue between the sending physician and the trauma control physician, and ultimately, between and amongst the trauma control physician, sending physician, and receiving physician (should it not be the trauma control physician). A draft form to be used to document the information necessary for the receiving physician was prepared by the committee. The committee also recognized that it would be essential for call system operators to be fluent in both official languages, in order to receive and transmit information in both English and French.

**Recommendation 3:** The system operator should be required to have minimum levels of education and skills and have basic knowledge of medical terminology related to trauma.

*Consultant's note: These skills are denoted in the full body of the report.*

**Audit Function of the Trauma Line System:** The committee noted the importance of a regular audit of the trauma system to ensure proper flow and appropriate management of delays and incidents. In its' deliberations, the committee discussed an array of parameters which might be monitored, including, trauma control physician response times, difficulties encountered facilitating dialogue between and amongst sending and receiving physicians, and data elements which were frequently requested, but not included in the template prepared for use by system operators.

**Recommendation 4:** Development of an audit system that monitors specified performance parameters and captures the frequency of and reasons for incidents and exceptions.

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# 10 Trauma Prevention Design Subcommittee

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Injury, both intentional and unintentional is a major cause of death, disability, and hospitalization in New Brunswick. In addition to the high cost of human suffering and loss, injury places significant financial cost on society. In New Brunswick, the total direct and indirect costs of unintentional injury are estimated at approximately \$502 million annually (\$664 for every citizen in the province.)

The Trauma Prevention Design Committee was mandated to review trauma prevention programs currently operated in the province, make recommendations on the efficiency and effectiveness of them and asked to comment on whether to cease or enhance these programs. In addition, they were asked to review programs in other provinces and make recommendations on incorporating those programs in New Brunswick. Finally, the committee was asked to review existing data to determine the predominant mechanisms of injury in New Brunswick. As an outcome of that review, the committee was to make recommendations that targeted public education, legislation, and public policy, and on establishing a monitoring system to review various reports and documents in order to target further opportunities for prevention.

The committee found that a great deal of effort was being expended in safety promotion around the province. However, it was noted that stakeholders worked in silos with very little communication, coordination or integration between individuals and/or groups working in injury prevention. A review of services also revealed that injury prevention opportunities and programs were not available in all communities within the province.

Due to the limited information currently being collected in the province, the only comprehensive injury data that the committee was able to access was the data at Saint John Regional Hospital. Of the 7766 individuals treated at their ED, the most common mechanisms for injury were related to falls (54 percent), motor vehicle crashes (14 percent) and workplace injuries (11 percent). While the incidence of fall related injuries was most common in people over 65 years, children accounted for 22 percent of the visits related to injury with the majority related to recreation and falls.

The committee noted that for every Canadian who dies from injury, approximately 23 are hospitalized, 1460 are seen in hospital EDs and an unknown number do not seek medical advice. The committee identified the stark contrast between treating injuries and the cost of

preventative programs. Research presented in the CDC 2000 report noted that \$1 spent on smoke alarms saves \$69, \$1 spent on bicycle helmets saves \$29, \$1 spent on child safety seats saves \$32 and \$1 spent on road improvements saves \$3. The committee emphasized injury prevention as an essential part of a comprehensive trauma system and identified the use of a comprehensive population based surveillance system as an essential part of an effective trauma system.

**Injury Prevention Committee:** As noted earlier, the committee's review of injury prevention programs and practices in New Brunswick revealed that while a great deal of effort is being put toward health and safety promotion around the province, current programs are fragmented, unavailable in some communities in the province and lack coordination between health promotion and injury prevention.

A coordinated approach to injury prevention and control was noted to be fundamental for building upon existing programs and eliminating duplication of services. The committee identified the need for a select committee to review injury data and use this information to determine priorities, target groups at risk and identify and evaluate interventions. The committee also identified the need to establish an organization that would oversee and coordinate activities, as well as monitor trends and changes in the environment that impact prevention initiatives. In addition, the organization would be responsible for communication, advocacy, research, education, partner coordination, distribution of resource material etc.

**Recommendation 1:** Establish a provincial injury prevention committee that will meet regularly and report to the Department of Health.

**Recommendation 2:** Create a provincial centre responsible for injury prevention and control.

*Consultant's note: In the early life of the trauma system it may be advisable to hire a provincial trauma prevention coordinator who will be responsible for assessing opportunities for prevention programs in the province, and making subsequent recommendations on a model that ensures the appropriate activities occur. He or she should also be responsible for reviewing other recommendations in this report that pertain to trauma and ensure their implementation, if appropriate.*

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**Current Prevention Programs:** The committee undertook a gap analysis of injury prevention programming by comparing the current inventory of programs to injury data from the Saint John Regional Hospital trauma registry. The committee's review indicated a need for prevention programming targeted towards reducing motor vehicle collisions, falls and recreational injuries.

**Recommendation 3:** Implement the Injury Prevention Strategy developed by the Department of Health, Primary Health Care Branch.

**Recommendation 4:** Each health zone should have a dedicated injury prevention resource.

- In the Level 3 sites there is opportunity to expand the role to include education, data collection, quality improvement and prevention.
- It is recommended that there be additional funding for a 0.5 RN (3) prevention position in the Level 2 site immediately and in the Level 3 sites within a year of the Trauma System implementation.

*Consultant's note: While the importance of injury prevention cannot be overestimated, it is uncertain whether the suggested investment in human resources is necessary to meet the desired objectives. As an alternative, it is suggested that the province appoint a provincial injury prevention coordinator, vested with responsibility for reviewing the recommendations in this report, and determining an appropriate course of action, including a human resource plan to support a provincial injury prevention program.*

**Recommendation 5:** The Provincial Injury Prevention Committee, Trauma Coordinators and Zone Resources should have access to current local and provincial data.

**Incorporation of Other Provincial Programs in New Brunswick:** The committee reviewed literature on best practices and injury prevention initiatives that have been successfully implemented in other provinces/countries. The committee focussed on injuries that had high costs and generally poor outcomes such as motor vehicle crashes, falls and children's injuries. A comprehensive table identifying programs, location and outcomes is included in the committee's full report. The recommendation which follows summarizes the committee's recommendations for the establishment of programs which have proven to be of benefit in other constituencies.

**Recommendation 6:** Based on best practice and injury prevention programs, it is recommended that the following programs be available in all health zones in the province:

- National Injury Prevention
- Falls Prevention Curriculum
- P.A.R.T.Y. Program
- SAFEKIDS
- Senior Safety
- THINKFIRST

*Consultant's note: This task should be seconded to the provincial injury prevention coordinator.*

**Legislative Changes:** The committee's literature review revealed evidence of potential changes to public policy and legislation which would decrease trauma morbidity and mortality. Public policy and legislative changes such as graduated licensing, the use of interlock devices, setting lower legal alcohol levels, legislating against the use of cell phones when driving, changes to speed limits and recreation and bicycle helmet enforcement have been found to be effective in lowering injury and accident rates.

**Recommendation 7:** It is recommended that the Provincial Injury Prevention Committee advocate for legislation and public policy initiatives that have been implemented in other provinces and countries as well as monitor and communicate policy changes made in the interest of public safety.

*Consultant's note: The consultants suggest that the chair of the committee be a member of and report to the Trauma Program Committee. Once recommendations have been discussed and endorsed at the Trauma Program Committee, they should be forwarded to the Trauma System Advisory Committee and then to the Department of Health for legislative or regulatory change. Once implemented, the initiatives should lead to decreased health delivery costs.*

**Public Communication:** Finally, the committee identified the important role of public awareness and education as part of a successful injury prevention program and made the following recommendations:

**Recommendation 8:** It is recommended that the provincial injury prevention committee review and communicate provincial injury data to increase awareness of changing injury patterns and trends.

*Consultant's note: This should be part of role description of provincial injury prevention coordinator.*

**Recommendation 9:** Develop a communication strategy to enhance communication and public education about injuries and risks.

*Consultant's note: This should be a component of the role of the provincial injury prevention coordinator.*



The Trauma Data Subcommittee was asked to define the required data elements for a provincial trauma registry. Specific tasks included the need to, review and make recommendations regarding models of collection, collation and dissemination of information and identify and ensure collection of data elements to support research activity. It was seen as essential that the New Brunswick data collection system would be able to share information with other registries, particularly the National Trauma Registry.

As part of their work, the committee found it essential to identify pre-requisites/activities prior to the establishment of a provincial trauma registry as well as staffing requirements for this registry. The Committee made 24 recommendations that are listed below.

**Data Elements:** The committee reviewed the Comprehensive Data Set (CDS) and confirmed that the data elements in it would meet the initial needs for building the Provincial Trauma Registry (PTR) and would require only minor changes to the existing data collection tool at Saint John Regional Hospital. The committee highlighted the importance of selecting software that would allow collecting additional data elements (as identified in the future), and the importance of working closely with the Canadian Institute for Health Information (CIHI) to improve data dictionaries and the consistent coding of records.

The committee was concerned that the collection of data derived only from the level 1 and 2 trauma centres would provide insufficient information to both government and researchers. Concerns included the fact that since a significant number of trauma patients will receive their definitive treatment in level 3 centres, opportunities to enhance provincial prevention programs would be limited if only the data that pertained to patients transported to level 1 and 2 centres was collected, and that the inability to collect information on trauma events which resulted in immediate death (and hence a coroner's referral) would further inhibit the development of a robust data pool for research and prevention programs.

**Recommendation 1:** Adopt the Comprehensive Data Set from the National Trauma Registry.

**Recommendation 2:** After 1 year a) add data from the level 3 centres and b) consider adding data from the coroner's office in the PTR.

**Recommendation 3:** Work with Health Emergency Management Services (HEMS) to provide GEO codes to coders.

**Models of Collection, Collation and Dissemination:** The committee discussed the initial collection of trauma data by nurse reviewers and coders in Level 1 and 2 trauma facilities through specified (Collector) software, which is the current industry standard. It was also recognized that data collected be collected in a timely way and that there be a quality assurance mechanism to ensure that the data elements captured and the quality of data collected was sufficient. The committee proposed that data be sent to the Department of Health from whom members of the trauma network could request ad-hoc reports.

This would necessitate establishing standards within the Department of Health that pertain to the timeliness of data completion, the turnaround time in response to requests for information, and policies regarding the release of information to researchers or other interested agencies, such as public health, prevention groups, etc.

**Recommendation 4:** The Provincial Trauma Registry be owned and reside within the Department.

**Recommendation 5:** The software called "Collector" should be used to capture data.

**Recommendation 6:** Facilities collecting data must follow the same data submission deadlines as the DAD thus ensuring access to data throughout the year.

**Recommendation 7:** The Department should process all data requests in a timely manner at no cost for provincial participants.

**Recommendation 8:** The Department should develop guidelines for coders to ensure consistent data collection and data quality.

*Consultant's note: Auditing the performance of coders should be a part of the role of the provincial director.*

**Recommendation 9:** The Department, in collaboration with the Trauma Program Director, will support coding by developing:

- templates to collect trauma data or charts for trauma patients; and
- standard forms/templates for transfers including a checklist; and monitoring implementation of approved templates in participating facilities.

**Information Sharing:** The committee recognized the need to participate in the CIHI National Trauma Registry as essential and underscored the comparability of data between the two systems.

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**Recommendation 10:** Participate in the CIHI National Trauma Registry (NTR).

**Recommendation 11:** Develop a Provincial Trauma Registry (PTR) which will feed into the NTR.

**Recommendation 12:** Implement a Web-enabled Collector solution through a provincial license with a central site “Web Collector” repository at the Department.

**Research Activities:** The committee recognized that one of the principal values of a data collection system was to support academic activities and to provide a robust database to inform and enable prevention activities, be they local, provincial, or national. The committee then explored and recommended measures to support trauma related prevention initiatives and research activities. In the course of its deliberations, the committee recognized that the total number of accidents in the province is much larger than the number of severe trauma episodes, and that there would be a need to establish parameters to limit the amount of data collection, particularly in the early history of the registry. The standard currently used by the national registry is to include only cases with an Injury Severity Score (ISS) greater than 12. In its early iteration, it was recommended that this should be the cutoff for data collection in New Brunswick, but the committee suggested that in the future the system should have the capacity to expand in order to provide a more comprehensive view of all preventable injuries.

Other data elements of interest in the future would include out of province transfers for the treatment of trauma and the inclusion of trauma deaths referred directly to the coroner’s office.

**Recommendation 13:** The Provincial Trauma Registry (PTR) should initially include cases with an ISS greater than 12.

**Recommendation 14:** The PTR should expand after one year to include qualifying cases from level 3 trauma centres and new data elements identified as necessary based on continuous evaluation and opportunities to improve the trauma network. Consideration should be given to collecting cases with an ISS above 9 and penetrating wounds.

**Recommendation 15:** The Department must provide the Provincial Trauma Director with information on trauma transfers out of province annually.

**Recommendation 16:** During the first year, a process should be established to ensure the Department receives notification from the Chief Coroner’s office for all non- intentional deaths within 24 hours and for the Registry Manager to review case records twice a year.

**Staffing Requirements:** In New Brunswick, information in a patient’s health record can be documented in both official languages. As a consequence, staff involved in the data collection would need to be bilingual. As part of their work, the committee reviewed current staffing at Saint John Regional Hospital, the Moncton Hospital, those centres seeking status as Level 3 trauma centres and the Department of Health. The committee also deliberated the training and education needs of those involved in the collection and management of Registry data and suggested job and role descriptions of those individuals.

**Recommendation 17:** The Department must hire a full time bilingual Trauma Registry Manager/Data Analyst this fiscal year.

**Recommendation 18:** The Department must include training for trauma coders in the Department data quality initiative budget.

**Recommendation 19:** The Trauma Registry Manager/ Data Analyst will:

- be a resource to nurse reviewers;
- be part of the permanent trauma advisory committee;
- participate on the Trauma Registry Information Specialist of Canada Committee (T.R.I.S.C.);
- work closely with the RHA coders, data analysts and nurse reviewers to continuously improve the data;
- work closely with CIHI to develop definitions and improve data submissions to the NTR;
- work with the software vendor to improve the software and have an error free abstract.

**Prerequisites for a Provincial Trauma Registry:** The committee identified several prerequisites/activities that had to occur before a Provincial Trauma Registry System could be implemented. Identified issues included the need to review and approve standardized reporting templates, recruit and train appropriate staff, and ensure the integrity of the data collection system

**Recommendation 20:** Develop and implement standard trauma templates and a transfer checklist to support good documentation and data collection.

**Recommendation 21:** Hire the following staff:

- Nurse reviewer at The Moncton City Hospital;
- Trauma Registry Manager/Data Analyst at the Department of Health.

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**Recommendation 22:** Test and implement needed software in the two reporting facilities.

**Recommendation 23:** Implement a web-enabled Collector solution/Central-site “Web Collector” repository to receive data at the Department. Review Collector installation at the SJRH and implement at TMH.

**Recommendation 24:** Fully train the coders, nurse reviewers and the data analyst.



# 12 Rehabilitation Subcommittee

This committee was mandated to ensure that requisite systems are in place to maximize the rehabilitation potential of all injured patients. As such, the committee was asked to consider hospital and community resources and identify gaps in the health care system related to the rehabilitation of those suffering head/brain/spinal and musculoskeletal injuries. As a second phase, the committee was asked to identify vocational/community gaps related to head/brain/spinal and musculoskeletal injuries.

The subcommittee's discussion and recommendations were guided by the following objective: "to structure a system which provides equal, timely and appropriate access to rehabilitation services for those who survive severe trauma in New Brunswick." The committee's recommendations re-affirm that early involvement by rehabilitation professionals is essential to minimize disability secondary to immobility, organize rehabilitation resources, identify particular rehabilitation problems, increase patient independence and decrease hospital length of stay thereby reducing the risk of secondary disability. The committee put forward 10 recommendations that are briefly summarized below.

In addition to these recommendations, the committee has prepared a comprehensive guideline for the rehabilitation component of the management of traumatized patients which is specific to the demographic and injury patterns. This guideline is included in its entirety in the committee's report.

**Rehabilitation Facilities:** Rehabilitation services for trauma patients should ideally be located in close proximity to their home region to facilitate timely repatriation.

**Recommendation 1:** Each Level 1, 2 and 3 hospital should have a dedicated rehabilitation unit with dedicated non-rotating staff to ensure maintenance of expertise and education

*Consultant's note: It is recognized that this objective has both capital and operating implications, and may, as a consequence, be difficult to implement. If, in fact, it proves to be impossible to create dedicated rehabilitation units in each such institution, it would be acceptable, in our opinion, to establish rehabilitation programs which are integrated and comprehensive and ensure high standards of assessment and therapy which is delivered in a timely, integrated, holistic manner.*

*As this process has created a forum for the province's rehabilitation specialists to engage with each other for the first time, the Department may wish to consider*

*establishing a provincial committee focused on rehabilitation services which may undertake responsibility for this recommendation.*

**Staffing for Rehabilitation Teams:** The committee underscored the importance of ensuring the availability of comprehensive resources dedicated to the rehabilitation of trauma patients. The committee emphasized the importance of ensuring the availability of speech therapists, occupational therapy, psycho-rehabilitation, et cetera. In its deliberations, the committee recognized that it would be impossible to provide all such services in every hospital in the province, and that a finite number of centres (particularly the level 1 and 2 trauma centres and the Stan Cassidy Centre) should be imbued with all these services. It would, however, be critical to ensure that while not all such services could be provided in every urban centre, there should be a high level of awareness of services which are available locally, and those which are available provincially. In addition to awareness of the services, a mechanism to ensure the timely referral and transfer of patients in need of specialized services would also be essential.

In addition, the close proximity of family members for trauma patients who require prolonged rehabilitation services was noted to be key in supporting skill training, basic care, independence and early discharge of trauma patients, thus necessitating an infrastructure which provided accommodation for families.

**Recommendation 2:** Moncton City Hospital, Saint John Regional Hospital and Stan Cassidy Centre for Rehabilitation require an on-site psychiatrist and a comprehensive array of therapists with special skills for the rehabilitation of trauma patients. In addition, rehabilitation units should support local arrangements to accommodate families of individuals with prolonged rehabilitation.

**Recommendation 3:** Each zone within each RHA should have a contact person familiar with rehabilitation resources to organize care and rehabilitation services for patient returning from the trauma centre.

**Additional Resources:** At the current time there is no psychiatrist practicing in the northern part of the province. As the population in this geographic area has a high concentration of Francophones, it was seen as desirable to not only recruit a psychiatrist to the area, but to ensure that he or she was capable of delivering service in both official languages.

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**Recommendation 4:** RHA A should hire an additional bilingual physiatrist to help coordinate rehabilitation services.

*Consultant's note: Currently there is no physiatrist practicing in the RHA. As his or her workload will only focus to a small extent on trauma patients, the cost of employment should be borne across several services.*

**Prosthetic Devices:** The committee felt strongly that differential funding of external prosthetic devices delays care and independence of trauma patients. Specifically, it was felt that the province's commitment to fund internal devices, but not external prosthetics, was discriminatory and placed trauma patients at risk of financial difficulties which are not encountered by others.

**Recommendation 5:** External prosthetic devices should be funded in the same way as internal prosthetic devices through the implementation of a formal assistive devices program.

*Consultant's note: This recommendation will require political support, annotation of costs and development of a budget and roll out plan if supported. This recommendation should be seen as only pertaining to external devices required by patients recovering from trauma.*

**Data Collection:** Broad data collection is essential to allowing the prevention group to target specific issues to reduce trauma, improve the trauma system and make informed resource allocation decisions.

**Recommendation 6:** Comprehensive data should be collected by rehabilitation professionals including: cause of injury, age, sex, type of injury, zone of residence, language preference and area in which stabilization occurred. Future data collection efforts should focus on alcohol and drug abuse, use of seatbelt, helmet etc.

*Consultant's note: The recommendations made by the Rehabilitation committee are supported by the data committee and the proposed data set will reflect the data elements identified as essential by the rehabilitation group. However, in the future, a mechanism to ensure that rehabilitation professionals can communicate their need for additional data elements to be included in the data set should be established.*

**Trauma Coordinator:** The committee was of the view that each trauma patient should have a relationship with a coordinator who would ensure that the patient received the appropriate services in a timely way. This individual would then be vested with responsibility for reporting on any perceived deficiencies and facilitating system change.

**Recommendation 7:** Individuals who have suffered trauma should be followed by a Trauma Coordinator to ensure that they receive appropriate services in the appropriate location.

**Staffing of Long Term Care Facilities:** The committee identified that there is a population of patients who have suffered severe traumatic brain injury which mitigates against their successful reintegration into the community. Such individuals will need access to a long-term care facility which can support their complex needs.

**Recommendation 8:** Appropriate staffing must be available in Long Term Care facilities so that they are able to meet the complex needs of individuals with severe TBI who cannot be reintegrated into the community.

**Rehabilitation Expert Panel:** During its discussions, the committee recognized that there are many issues in rehabilitation that remain unaddressed, such as pediatric rehabilitation, ongoing education in specialized rehabilitation and review of assistive devices. In the future, data that will become available through the Trauma Registry will be a tool to facilitate better understanding of outcomes and gaps, thus facilitating recommendations for improvement. However, the committee felt that in the absence of a specific body to which these recommendations could be addressed, system improvement might not occur.

**Recommendation 9:** The Department should establish a Rehabilitation Expert Panel to address issues of timely and appropriate rehabilitation.

**Rehabilitation Pathways:** The committee identified the importance of trauma patients receiving care at facilities that have the resources and expertise to provide appropriate care for their injury. The committee reviewed the services necessary for patients of different age groups suffering a variety of traumatic injuries. They then developed a set of pathways providing recommendations specific to age groups and injury patterns, indicating the venue in which they should be treated, and the necessary resources to support the care.

**Recommendation 10:** Patients who have suffered severe trauma in New Brunswick should be directed to the facility which can provide appropriate care for their injury.

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# 13 Policies and Procedures Subcommittee

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The policies and procedures subcommittee has not yet commenced its deliberations. Terms of reference, outlined below, were prepared at the time at the subcommittee structure was established. The vision for this committee was that it would have both immediate and long-term responsibilities. It was viewed as a long-term oversight committee which would provide operational oversight of the provincial program. The immediate responsibilities were seen as ensuring that the appropriate policies and procedures, including hospital, pre-hospital, and Department of Health policies were in place in order to allow the trauma system to become operational. These included, for instance, changes to hospital bylaws, regional operating plans, or Department of Health policies or funding commitments. These included any or all of:

- confirming the terms of reference and job descriptions for the provincial medical director, and program director
- changing credentialing requirements for emergency physicians, surgeons, anaesthetists or orthopedic surgeons involved in trauma care either at a site-specific or regional level
- approving the pre-hospital care providers protocols for bypass
- approving standardized charts and audit templates
- ensuring the availability of second call physicians in provincial emergency departments

Longer-term policies and procedures which may need to be entrenched might include:

- defining the relationship between the provincial trauma registry and the national trauma registry

- ensuring regular accreditation of all sites engaged in the provision of trauma care by the Trauma Association of Canada
- developing template models for the evaluation of research proposals
- facilitating relationships with adjacent provinces as it pertains to interprovincial transfers when required
- ensuring implementation of the recommendations made by other subcommittees which have not yet been put in place once the provincial system becomes operational

Subsequent to the completion of the first draft of this report, extensive discussion of the “governance model” of the trauma system took place. As a consequence of that discussion, an alternate model of management, outlined in the next chapter of this report, has been endorsed. A program management model, with a Trauma Program Management Committee, has been proposed.

The terms of reference of the Trauma Program Management Committee include virtually all the activities outlined above, and also incorporate a variety of other “management” functions.

*Consultant’s note: We believe that the model described in the next chapter will address not only the short term but also the long term management needs of the system and ensure a consensual and collaborative management model and provide a platform for communication, quality assurance and educational programming in an efficient and effective manner. The proposed model also ensures accountability and responsibility for the management the trauma system are vested with appropriate individuals and committees.*





# 14 Outstanding Issues and Next Steps

In this chapter we annotate the issues remaining to be addressed and provide a broad overview and suggested approach to completing the next steps which will ensure the successful implementation of a province-wide trauma system.

The issues presented are not necessarily discussed in the order of priority, and do not necessarily need to be addressed sequentially. Many of the activities can be undertaken concomitantly, and the completion of one step or set of activities should facilitate the commencement of another set of activities, without necessarily waiting for all activities to be completed before embarking on another set of initiatives.

The activities listed below will need to be undertaken once the report as a whole has been reviewed by the Department of Health, and confirmation has been received of the Department's endorsement of the recommendations, and the commitment of funding to support these initiatives. Most will also need to await confirmation of the Department's agreement with the sequencing and suggested urgency of completion of these priorities, in order to ensure an orderly implementation of the provincial trauma system.

## 1 Governance Model

Once endorsement has been received, the first priority should be to establish a governance structure for the province's trauma system. There are two models which are suggested as options. The first would be to establish an independent province-wide program, with reporting relationships for clinical matters to the Vice President of Medical Affairs of Regional Health Authority B, and for financial and policy matters directly to the Department. Alternatively, both functions (clinical and financial/policy) could be attended by Regional Health Authority B.

A second model would create an intermediate body vested with oversight responsibility of the provincial trauma program, undertaken on behalf of the Department. This committee, to be called, for purposes of this document, the Trauma System Advisory Committee, would take responsibility for strategic and financial functions, with clinical responsibilities being supervised by Regional Health Authority B. In essence, it would serve the governance function for the system. The Trauma System Advisory Committee could establish a policies and procedures committee, or alternatively, could take

direct responsibility for this function itself. It could report either to the CEO of RHA B or to the Department.

The trauma system should, we suggest, be managed in a programmatic manner. An interdisciplinary Program Council should be established, chaired by either or of the provincial medical director or the provincial administrative director of the trauma program. Attendees should be drawn from a variety of constituencies, and represent the geographic and clinical diversity of the province. The program Council should be interdisciplinary in nature, with representatives from medicine, nursing, pre-hospital care, rehabilitation and prevention, as well as other disciplines. The program council should have a number of sub committees, each vested with specific areas of responsibility for the trauma program. The committees should include, at a minimum, committees responsible for:

- research
- quality assurance
- education
- standards
- prevention

In order to ensure effective communication, coordination and consistency of direction, a member of the program committee should be the chair of each of the subcommittees. The program council should meet monthly, with subcommittees meeting, at a minimum, on a quarterly basis.

*Consultant's note: After consultation with the Trauma System Advisory Committee, it was agreed that a **Trauma Program Management Committee (TPMC)** should be established.*

The terms of reference for the **TPMC** are as follows:

### Purpose:

The New Brunswick Trauma Program Management Committee is responsible for the delivery of quality trauma services through the continuum from prevention and pre-hospital care to rehabilitation

### Responsibilities:

- Serve as the operational authority for the provincial trauma system

- Ensure and monitor program development and evaluation, quality improvement, access and efficiency related to trauma services in New Brunswick
- Establish standards and recommendations necessary/ required for the delivery of trauma services in New Brunswick
- Injury prevention for New Brunswick

Initially, the following five subcommittees will be established, reporting directly through the chairs (each of whom will be a member of the TPMC) to the New Brunswick Trauma Program Management Committee.

1. Policy and Procedure
2. Quality Assurance
3. Standards
4. Research and Education
5. Injury Prevention

### Reporting Relationship:

The committee reports to the New Brunswick Trauma System Advisory Committee (TSAC) and the CEO of RHA B

### Membership:

- Trauma Medical Director
- Trauma Administrative Director
- Trauma Registry Manager/Data Analyst
- VP Acute Care RHA A
- VP Acute Care RHA B
- Five Chairs of the subcommittees identified above
- One clinical representative from the Level 2 trauma centre
- Two clinical representatives from level 3 trauma centres
- Two clinical representatives of level 5 trauma centres
- Clinical consultant hospital services

### Policies:

- the committee will meet monthly
- additional meetings may be called at the discretion of the chair
- travel expenses will be covered by each member organization

- the terms of reference may be changed with the approval of the New Brunswick Trauma System Advisory Committee
- Secretariat to the committee will be provided by the New Brunswick trauma program
- the Trauma Medical Director and Administrative Director will alternate in the role of chair
- subcommittee meetings will occur quarterly at a minimum,

In addition, the steering committee agreed with the establishment of an oversight/governance committee, to be called the **Trauma System Advisory Committee (TSAC)**, with terms of reference as follows.

### Terms of Reference:

#### Purpose:

This committee will mentor and monitor the activities of the New Brunswick Trauma Program Management Committee, and serve as the governance authority of the provincial trauma system

The New Brunswick Trauma System Advisory Committee provides key advice to government and Regional Health Authorities (RHA's) on the delivery, development and long-term strategic planning for trauma services in New Brunswick

- The New Brunswick Trauma System Advisory Committee will monitor and assess access to and provision of trauma services in the province; identify issues, options and opportunities; and advise government and RHA's on strategies to achieve the best possible quality, cost efficient trauma services for New Brunswickers.

### Reporting Relationship:

- The committee reports to the Assistant Deputy Minister of Institutional, Health Emergency Management and Pharmaceutical Services, Department of Health.

### Membership:

- Trauma Medical Director
- Trauma Administrative Director
- Trauma Registry Manager/Data Analyst
- VP Medical Affairs RHA B
- VP Medical Affairs RHA A
- CEO RHA A
- CEO RHA B

- Executive Director, Hospital Services Branch, Department of Health
- Director, Clinical Programs, Hospital Services Branch Department of Health

### Policies:

- the committee will meet at least quarterly
- additional meetings may be called at the discretion of the chair
- the committee may request the establishment of working groups/subcommittees as required
- travel expenses will be covered by each member organization
- the terms of reference may be changed with the approval of the CEO of RHA B and the Executive Director, Hospital Services Branch of the Department of Health
- Secretariat to the committee will be provided by the administrative assistant to the trauma program.

## 2 Human Resources

One of the earliest orders of business after official declaration of the provincial trauma program will be to implement a planned, coordinated and integrated human resources plan. The plan should commence with the confirmation of the hiring of the senior leaders of the program, specifically the medical and administrative program directors. Once these individuals have been confirmed, the other “leadership” positions should be advertised, recruited and filled. Specifically, the trauma coordinator, trauma nurses, and trauma program manager should be hired.

Once these individuals are in place, the roles and job descriptions for the various staff level positions suggested elsewhere in this document and the Hay report should be reviewed, and individuals recruited and/or appointed to these positions. This will necessitate a process for recruiting and appointing not only physicians, but others.

Specifically, trauma team leaders should be recruited and their services contracted for. In addition, it will be necessary to seek and appoint analysts and administrative assistants.

Once these appointments have been confirmed, it will be necessary to begin a province-wide process of orientation of those involved in the new trauma system. This will require planning, developing, implementing and/or contracting for various educational programs, in order to ensure that the knowledge gaps identified by both the physician human resource and non-physician

human resource committees are addressed. This educational planning will include, at a minimum, ATLS training, TNCC training, and basic trauma training for paramedics.

Additionally, a program to recruit, train, and credential “transfer” personnel, whether they are respiratory therapists, nursing staff, physicians, or pre-hospital care providers should begin.

Finally, early in the first year of the program, both a retreat and a strategic planning exercise should be conducted. The former process should focus on general education about and orientation to the new trauma system, and afford opportunities for those who will be working with each other, whether in teams or in an integrated trauma delivery system, to network and become familiar with the future goals and objectives of the trauma program.

The strategic planning process should mirror that of other strategic planning exercises, and establish a vision and mission for the provincial trauma program, as well as establishing key strategic imperatives for the next one, three and five years, as well as action plans to ensure that they are achieved.

## 3 Infrastructure

In order to achieve the objectives of the program, it will be necessary to ensure that all the infrastructure elements are planned and implemented. These are not presented in order of importance, or a suggested order of implementation, but only to ensure that each element is addressed early in the establishment of the program.

They include:

- a plan for prehospital care, including a decision as to whether or not the province is to embark on the acute care paramedic program, and subsequently commence either training or recruitment of these individuals
- implementation of the 1-800 system
- confirmation of the need and desire to reduce chute time, with subsequent recruitment, training and scheduling of pilots
- emergency nurses and physicians will need to be recruited and a plan developed to ensure that they have the knowledge and procedural skills necessary for their institution’s role in the trauma system.

Specific to the hospital care program, it will be necessary to ensure that all the necessary capital equipment has been purchased and put in place, and individuals oriented as to its appropriate use.

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The protocols outlined in other sections of this report, including those for bypass, diagnostic imaging, laboratory testing, blood transfusion, and mobilization of second call physicians, amongst others, will need to be developed, approved and disseminated.

It will be necessary to develop and ensure the availability, in both official languages, of a patient chart specific to trauma patients. Ensuring that it contains the data elements necessary for compliance with the National Trauma Registry core elements will also be necessary.

Each hospital will have to ensure that call schedules comply with the requirements of the Trauma Association of Canada, and that there is appropriate availability of operating rooms and critical care resources to support that institution's role in the trauma system.

Finally, recommendations regarding the capacity and skill set of the rehabilitation system will have to be addressed, in order to ensure that patients may be transferred from acute-care to rehabilitation facilities in a timely way, and that the quality of the rehabilitative process is optimized.

#### 4 Extra-Provincial Agreements

As alluded to in the Hay reports, it will be necessary to have entrenched relationships for collaboration and cooperation with adjacent provinces, particularly Québec, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. These agreements may be required to ensure availability of resources for the critically injured patient should the New Brunswick system be overwhelmed. The arrangements may also need to focus on specific gaps in the availability of services (e.g. paediatric critical care) in New Brunswick. These agreements should initially be explored between and among provincial directors, with representatives of the various Ministries of Health involved early in the process.

#### 5 Prevention

This report contains a large number of suggestions regarding the significance of effective prevention programming. There are a number of specific recommendations regarding staffing, and the coordination and integration of existing programs. It is suggested that one of the subcommittees of the provincial program committee be a prevention committee, vested with responsibility for ensuring the implementation of the recommendations contained elsewhere in this report.

#### 6 Quality Assurance

It is necessary to ensure that there is an active quality assurance program in place early in the program's history. The quality assurance committee will exercise oversight responsibility for the quality of care received, the quality of documentation, the quality of data input, and measure, monitor and report on the progress of these activities as well as on peer review.

#### Summary

There are a large number of administrative and clinical imperatives which need to be planned and implemented in the first year of the New Brunswick provincial trauma program. Once a governance structure is established, individuals with leadership roles should ensure a dynamic, coordinated and integrated approach to addressing each of these strategic imperatives.



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# 15 Conclusion

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The province of New Brunswick is about to embark on an exciting, challenging, and dynamic process. The establishment of a provincial trauma system is a necessary and important step to ensure the safety and well-being of those sustaining critical injuries.

In this report, we have annotated the process which has led to the establishment of the provincial system, defined the necessary fiscal, clinical, and administrative imperatives to ensure the successful development and implementation of the system, and outlined a model of governance which should ensure a successful implementation.

The province is to be commended for committing itself to this undertaking, and those who have contributed to the process should be congratulated for the time, energy, and enthusiasm which they have devoted to the completion of a complex task.

This report is not the culmination, but the beginning of this process, and it is anticipated that those recruited to the provincial, system will be successful in creating a model to be emulated in other constituencies.



# Appendix A:

## Summary of Recommendations, Implementation Timelines and Consultant Comments

#	Recommendation	Urgency	Notes/Consultant's Comments	Cost Implications		
<b>Pre Hospital Care Sub Committee</b>						
1	Current response time standards for land ambulances are applicable to Trauma response, and are endorsed as the standards that should be adhered to in New Brunswick.	P		Requires no significant change from status quo	none	
2	All paramedics must receive a course in basic trauma assessment.	P		Will require developing a schedule to ensure training completed in near future.	Budget to include training costs, staff replacement /coverage costs while paramedics at course	
3	Proposed Field Trauma Triage Guideline and attached Destination policies must be adopted.	P		May require legislative changes to <i>Ambulance Act</i> and will require paramedic orientation to new practices	No costs involved	
4	Air New Brunswick, in collaboration with the provincial Trauma Registry and the RHAs, should implement changes to its databases to permit capture of diagnoses and acuity levels of patients on inter-facility transfers.		12	Data will inform decision making on future configuration of air transport system.	No costs involved, other than minor software changes,	
5	Policies must be implemented to ensure the availability of an appropriately qualified escort to enable timely and safe inter-facility transfers. Advanced Care Paramedics should be deployed as soon as possible to take over this role.		6	Will require time to develop policy (harmonization between the RHA's is suggested) and develop and post "call schedules" for the escorts. If province proceeds with advanced care paramedic program, this recommendation will become moot.	No costs involved as personnel are already devoted to this task.	
6	Urgent consideration should be given to the training and employment of a cohort of Advanced Care Paramedics.		12	X	The committee recommendation is strongly endorsed by the consultants. It is suggested that a decision to proceed (or not) with this recommendation be made within a year. Subsequent planning for training, recruitment, deployment and program evaluation will take two to three years. The budget will depend on training needs, the number of ACP's recruited additional equipment to outfit ambulances etc.	
7	Policy and procedures must be developed to ensure appropriate utilization of the Air Care resource, thus ensuring availability for trauma transfers. (Appendix F, Table 1 <i>within subcommittee report</i> )		12		The enactment of such policies will maximize the availability of air transport for the critically ill and injured in the province and obviate the need to purchase/ lease additional aircraft.	None- may be cost savings if net decrease in the use of air transport
Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other						

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
8	Policies and procedures must be implemented at MCMC to ensure rapid and reliable coordination of air and land resources.	P							No costs anticipated
9	MCMC should implement a dedicated dispatcher for Air Care.		6					May require hiring additional dispatchers but should try to accomplish with reconfiguring existing staff and work patterns.	
10	Chute time for Air care should be reduced to 15 minutes.		6					Costs of implementation need to be balanced against quality improvement associated with decreased response time and opportunity to defer on purchasing/leasing additional air craft (fixed wing or rotary). Given that "total" transport time for air transfers includes notification, mobilization of resources, flight time to the sending hospital, transfer from the sending institution to the air strip, return flight time and transfer from the air strip to the receiving hospital, total transfer time will remain, at a minimum, three hours. Most life saving interventions in trauma must be instituted within the "golden hour" after the injury. Thus, decreasing chute time will not result in significant decreases in mortality. Conversely, it will be necessary to ensure that life saving interventions such as airway management, drainage of a tension pneumothorax or control of exsanguinating haemorrhage occur at the site that first treats the patient. Bearing in mind the significant annual operating costs entailed in lowering chute time to 15 minutes, it is suggested that ensuring the availability of resources to treat immediate life threatening injuries is the preferred approach.	Will require additional funds to ensure air crews are on site versus on call.
11	A fixed wing aircraft using a coordinated airport pick-up procedure should be the mode of long distance transport for acutely ill and injured patients. ACPs should be deployed to ensure maximum speed and efficiency for this process.		6			X			No costs.
12	Once the Trauma System and Registry are operational, an evaluation of the potential benefits (number of calls, response times and scene response) of a rotor wing response should be conducted.			18				This process should definitively address the issue of whether or not to invest in rotor wing aircraft. Consideration of an Atlantic Canada service should take place as part of the evaluation.	No costs.
13	Moncton should remain the base for the air ambulance.					ongoing			
Urgency: P - Pre-Requsite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other									



#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
14	NB should implement a public safety trunked mobile radio network. The solution must provide full interoperability for the Provincial Ambulance Services System, as well as inter-agency radio communications to all other public safety agencies.					24		Some discussion already of this issue.	Will be considerable costs.
15	Consideration should be given to individual frequencies or talk groups for each receiving emergency department.			12				Portends significant benefit to "quality of work place" in the ED. This action item has already been considered and supported and will be implemented as of December 09.	Low cost
16	The receiving hospital should only hear radio traffic pertaining to patients they will be receiving.			12				See above. Will also be implemented December 09.	

#### Hospital Human Resources Sub-Committee (non-physician)

17	Continuous on-site CT services. For Level 1 and 2 centres, additional resources are required in order to provide for continuous on-site CT technician services. The gross estimated incremental costs are \$225K, although this amount will be offset by reduced on-call and call back costs.	P	6				May not be feasible	May be deferred for a maximum of six months.	Costs as indicated, offset needs to be quantified.
18	Standardized radiology protocols. Standardized provincial CT and radiology protocols are required for the diagnostic evaluation of trauma patients. This may be achieved in a number of ways (e.g. under the auspices of the Provincial Trauma Medical Director, through a separate initiative involving a representative group of trauma surgeons and radiologists).			12				Process for implementation as indicated.	No cost.
19	Support for electronic imaging system. As the electronic imaging system (PACS) enables exams and reports to be shared seamlessly for trauma (and other) patients, arrangements should be undertaken to ensure the continuous operation of this information system, including after-hours support. At present, local system support is limited or non-existent in after-hour and weekend periods.			12					Cost undetermined.
20	Standardize massive transfusion policies provincially.		6					Easily implemented.	No cost.
21	Implement a standardized trauma lab panel in accordance with ATLS and TAC Guidelines (see associated Infrastructure recommendation).		6					Suggest use panel suggested in existing literature	No cost.

Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
22	That Health Human Resource planning at the macro and local levels take into consideration the ongoing needs and the system's ability to sustain quality trauma services to meet TAC standards. Enhanced emphasis on the recruitment and retention of Medical Imaging, Lab Technologists, Lab Assistants, Respiratory Therapists and Registered Nurses.						ongoing	High importance attached to ensuring stable HR resource in the jobs listed	No cost.
23	Approved funding for a 1.0 FTE Trauma Program Administrative Director to be located at the Level 1 Trauma Centre but who has provincial program scope. All necessary supports would be provided. <i>(Appendix 2 within sub-committee report)</i>	P						Necessary supports would include human resource supports (secretarial), office space, computer, and access to data.	Salary to be negotiated according to Department scale.
24	Approved funding for 1.0 FTE Trauma Coordinator (RN4) position to be located at the Level 2 Trauma Centre. All necessary supports to be provided. A PDQ has been developed and will be forwarded to the Province. Classification to be determined. <i>(Appendix 3 within sub-committee report)</i>	P							Salary cost to be determined by Department scale.
25	Based on workload and program requirements, it is recommended that an additional 0.5 RN3 Trauma Nurse position be established at the Level 2 Trauma Centre. A PDQ for this position is included in this report in draft form. <i>(Appendix 4 within sub-committee report)</i>		6						Salary cost to be determined by Department scale.
26	Approved funding for Trauma Nurses (RN3) to be designated for the Level 3 Trauma Centres but who would also have responsibility for the Level 5 Centres within a particular geographic area. All necessary supports to be provided. The positions could be designated as follows: 1.0 FTE for the following hospitals – Georges Dumont, Dr. Everett Chalmers Regional Hospital, Edmundston Regional Hospital and Chaleur Regional Hospital. As well, it is being recommended that a 0.5 FTE RN3 be designated for the Miramichi Regional Hospital.						Timeline to be determined after consideration of whether to proceed with this recommendation	The consultant's suggest that this position could and should be deferred until such time as the volume of trauma activity within the province is accurately determined, and a cost benefit decision can be made as to the necessity for additional individuals to subserve this role. The consultants believe that it may be possible and appropriate for the trauma coordinator and trauma nurses in the level 1 and 2 centres to achieve the stated objectives	
Urgency: P - Pre-Requisite		6 - Within 6 Months	12 - Within 12 Months	18 - Within 18 Months	24 - Within 24 Months	X - Other			

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
27	On recommendation from the Data Sub-Committee, approved funding for a Trauma Registry Manager/Analyst to be located in the Department of Health. This position is to be a non bargaining position. A PDQ has to be developed and the Data Sub-Committee has agreed to do this and forward it to the Classification Committee.	P							Salary cost to be determined by Department scale.
28	Approved funding for three Administrative Assistants (1076) positions to be allocated as follows: one to the Medical Director, one to the Program Administrative Director to be headquartered at the Level 1 Trauma Centre in Saint John and one to support activity at the Level 2 Trauma Centre at The Moncton Hospital.	P						If the administrative assistant's role is confined to the medical director's trauma position only, and not his or her other clinical responsibilities, it is possible that one assistant may be able to subserve the needs of both the medical and administrative trauma directors. It is also possible that the individual recruited to support activity at the level 2 trauma centre may be able to achieve this as a .5 full-time equivalent, depending on the ultimate volumes of activity.	Cost to be determined by Department scale.
29	That there be an assessment of impact on workload for the existing Health Records Coders in each of the Level 3 designated sites to determine the resource needs to accommodate local trauma coding and data entry. Currently there is a 0.5 FTE designated resource at the Level 1 and Level 2 centres.				24			It is noted that in the early iteration of the trauma system, the level 3 sites will not be submitting data to the Provincial Trauma Registry. The assessment will need to be deferred until such time as Level 3 sites have submitted sufficient data to make meaningful evaluation.	
30	That all Emergency Department, ICU, Neuro ICU and Orthopedic nurses be required to take the TNCC Course within the first year of employment.			12				We suggest that while it is appropriate for ED, ICU and Neuro ICU nurses to receive this training, it may not be necessary for nurses working on the orthopaedic service. As many of the skills obtained will be applicable to a wide range of patients, not only the seriously injured, the costs of training should be amortized across all programs which will benefit from the enhanced training ( e.g. emergency medicine, critical care, neurosurgery etc.)	Costs will include tuition, staff replacement costs
31	Attendance at ACLS be considered mandatory for all Emergency Department, ICU and PACU Nurses.			12				In principle, the consultants support this recommendation as it will improve the care that patients receive. However, it applies almost exclusively to patients presenting with cardiac conditions, and is rarely applicable to trauma patients. Thus, the cost should be borne by surgery, critical care and emergency medicine programs.	none
32	Increase the pool of TNCC instructors by six to eight instructors. Specific geographic areas might include: four within the area covering Edmundston, Grand Falls, St. Quentin and Upper River Valley; four covering Campbellton, Bathurst and Miramichi.			12				Reconsider the number of instructors necessary in light of the modifications suggested to recommendation 30.	Cost of tuition for TNCC instructors. Some cost recovery if staff do not need to travel to attend course.
Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other									

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
33	Translate the TNCC exam into French.			12					Can presumably be done by department staff at no cost.
34	Encourage nurses from the Level 1,2 and 3 Trauma Centres to audit the ATLS program.			12				Registration at ATLS courses is restricted to physicians. Nurses are, however, encouraged and facilitated in their desire to attend the program as "auditors". In addition to "early" attendance, there will be a need to "reserve" spots for new recruits, retraining etc. Another benefit of the recommendation will be to provide nurses and physicians with the opportunity to "train" together, enhancing the functioning of the trauma "team".	No cost anticipated.
35	Standardize the trauma orientation/competencies for Emergency Departments and ICUs. Update the existing Trauma Orientation manual developed by the Zone 2 Trauma Program.		6					Can be accomplished using existing educators, with support from provincial director.	
36	Develop and implement a standard review process for trauma competency/skill maintenance. This would include a formal sign-off process.		6					Trauma Program Committee should endorse the process	No cost.
37	Attendance at ACLS be a mandatory requirement for Respiratory Therapists participating in the care of trauma patients within one year of employment.			12				As noted in recommendation 31, knowledge of ACLS is principally of benefit to the treatment of cardiac patients. The Trauma Program Committee may wish to endorse this recommendation, but the cost should be borne by medicine, cardiology or critical care programs. Will require 12 months to ensure all RT's trained.	none
38	That the Leads for Respiratory Therapy in each zone explore the opportunity for Respiratory Therapists to participate in Trauma Orientation and ongoing education with the Nursing staff.		6					Discussions should begin immediately.	Costs will be included in existing orientation costs.
39	That a Provincial Trauma Committee determine the required clinical skills/competencies for all escorts including Respiratory Therapists involved in inter-facility transfer of trauma patients.		6					The Trauma Program Committee should be vested with this responsibility This will link to other recommendations on personnel for interfacility transfers and the proposed integration of ACP's	
40	Develop a protocol designating which patients should be transferred from an outside facility directly to the receiving ED, OR and\ or ICU.		6					It was recognized that some patients might most appropriately be transferred to the emergency department in order to allow for comprehensive assessment, resuscitation and stabilization prior to definitive treatment decisions, while others might, more appropriately, be transferred directly to an operating room and/or intensive care unit, depending on the clinical scenario and the opinion and judgment of the trauma control physician. Trauma Program Committee should deliberate.	No cost.

Urgency: P - Pre-Requsite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications		
41	Develop standardized, evidence based trauma protocols/policies and treatment guidelines relevant to each department within each facility that typically cares for trauma patients. Consideration should be given to the various patient conditions.			12				This recommendation emphasizes the importance of care maps and critical pathways which are standardized, and based on evidence-based, best practice approach to care. Trauma Program Committee to deliberate under guidance of Medical Director.	No cost		
42	Develop a "no refusal" policy for major trauma relevant to all trauma designated sites.	P						As indicated in the original Hay Group report, it is essential that a "no refusal" policy be implemented for all receiving centres in order to ensure that patients are transferred from sending to receiving hospitals with the maximum efficiency, in order to reduce potential morbidity.	No cost		
43	Review and revise admission and discharge criteria for ICU trauma admissions.		6					This recommendation also speaks to an evidence based, best practice approach to care. Ideally, with provincially standardized criteria, the efficiency and effectiveness of utilization of intensive care units will be optimized.	No cost		
44	Develop standardized protocols for the immediate treatment of burns.			12				Should be a task for the Trauma Program Committee.	No cost		
45	Establish case definition for pediatric trauma.		6					The age definition of a pediatric patient is not consistent across the province. While both the Saint John Regional Hospital and Moncton City Hospital have the capacity to care for seriously ill and injured children, it will also be necessary to develop formal transfer policies and protocols in cooperation with the IWK Hospital in Halifax, which is the regional tertiary quaternary pediatric resource.	No cost		
46	Develop standard criteria/ guidelines for transfer of pediatric trauma, spinal cord trauma, head trauma and burn injured patients.			12				Will require input of Trauma Program Committee.	No Cost		
47	Develop a provincial Code Orange (external disaster) policy which is standardized and integrates the approach to managing mass casualty events, including mock exercises.					24		Much of the planning for a provincial system focuses on the management of a finite number of patients. While this is the most commonly encountered scenario, it is also essential to ensure that planning for mass casualty events is conducted. Developing and testing a plan will require devoted time of existing personnel (versus new hires) and staging a mock disaster will be resource intensive. At least one year of planning will be necessary before conducting a large scale mock exercise.			
48	Develop a comprehensive, provincial trauma quality improvement plan.			12				This task is part of the role of the administrative and medical provincial directors.	No Cost		
Urgency: P - Pre-Requsite		6 - Within 6 Months		12 - Within 12 Months		18 - Within 18 Months		24 - Within 24 Months		X - Other	

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications		
49	Encourage research within the trauma stakeholder community appropriate to the level of trauma care provided and the community served.						Ongoing	Ongoing responsibility of Provincial director.			
50	With the establishment of a Provincial Trauma Committee, ensure that services such as Social Work, Chaplaincy, Child Life, Psychology and Staff Support Systems are available to trauma patients/families.						Ongoing	While much of the focus of this report is on the medical, nursing, health professional and technologic support for the care of the trauma victim, the committee has appropriately recognized the needs of the families of trauma victims to access an array of services to support them, as well as the impact of trauma on caregivers, who may well need access to debriefings, and longitudinal support, particularly in cases of mass casualties or other tragic circumstances, such as the paediatric deaths. No cost but may require explicit direction to professional staff indicating that this is part of role description.			
51	Department of Health to consider designated funding to support acquisition of necessary trauma equipment.	P						This recommendation recognizes that in the early history of the trauma system, it will be necessary to acquire a significant amount of capital equipment, and that it would be inappropriate for requests for this equipment to "compete" with the department's other budgetary demands. Once the trauma system is fully functional, there will be an ongoing need for a system of capital equipment evaluation and acquisition which recognizes the unique and special needs for trauma care, and does not compete with the acquisition of equipment for General Hospital needs. Costs may be significant and will require setting a capital equipment replacement budget starting in year 3 of the program. The needs of the Level 1 and 2 centres should be addressed immediately, while the needs of other centres may be deferred for a short period.			
52	Convene a process to conduct an in-depth review of the necessary trauma equipment (including operating room equipment) for each of the Level 3 and 5 Centre and recommend addition or replacement of the equipment based on the need.		6					See note to recommendation #51			
53	RHA B to continue recruiting for certified emergency physicians for the Level 1 Trauma Centre.						ongoing	The recommendation recognizes the importance of having a cohort of sufficient size and appropriately trained emergency physicians available, particularly in the level 1 and 2 trauma centres.	No additional cost as should be anticipated in medical services budget.		
Urgency: P - Pre-Requsite		6 - Within 6 Months		12 - Within 12 Months		18 - Within 18 Months		24 - Within 24 Months		X - Other	

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
54	The George Dumont Hospital to ensure that Emergency Physicians are trained in Emergency Ultrasound Technology and that appropriate ED ultrasound technology is acquired.			12				See note to recommendation 57.	Small budget required to support the cost of an educational program. The skill will be used primarily for the diagnosis of conditions such as abdominal pain, and, as such, the burden of the cost of training should not be attributed to the trauma program.
55	Ensure that Miramichi Regional Hospital and Edmundston Regional Hospital have designated Medical Directors of their Intensive Care Units.	P							Will require annual stipend proportionate to others with similar appointment.

### Hospital Human Resources (physician group)

56	Level 1 and 2 facilities should ensure double coverage in the Emergency Department 24 hours/day.						Not implementable	We suggest that this recommendation is not implementable. The volume of activity on the midnight shift in these facilities is insufficient to warrant double coverage, and there is no ED in the country, even those with higher visit volumes, which requires double coverage on the midnight shift. There should, however, be a trauma team leader on call 24 hours a day who should NOT be the individual working the midnight shift.	
57	ATLS training should be required and sustained for all emergency physicians practicing in Level 1, 2 and 3 facilities. In addition, all emergency physicians in Level 1 and 2 facilities should be trained in the use of ultrasound in the Emergency Department (so called FAST).			12			ongoing for refresher courses	The American College of Surgeons, the developers, "owners" and managers of the ATLS program, specifically caution against requiring ATLS certification as a credentialing tool and are, in fact, opposed to its use for this purpose. They do not believe that it can or should be used as a job requirement. Thus, a recommendation requiring training is acceptable, but one requiring "certification" would not be. The Trauma Association of Canada requires that Level 1 and 2 trauma centres have the capacity to perform FAST. The technique can be used for a variety of conditions, not all of which are related to trauma care (e.g. diagnosis of gall stones or ectopic pregnancy). However, there is a requirement to perform a minimum number of ultrasounds per year to retain skill, and it is uncertain, but unlikely, that practitioners in Level 3 centres will achieve the target number. Before committing to training in Level 3 centres, it will be important to determine if the clinical volume is sufficient to merit the cost of training. See #54 above.	Cost of ultrasound training typically borne by the physician but if the Department has agreed to fund this, tuition cost will need to be calculated. As much of the "total" utilization of the skill will be for non-traumatic conditions, cost of training should be amortized over several disciplines.

Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
58	Enhance frequency and flexibility of scheduling of educational courses currently offered to physicians in Zone 2. Ultrasound training should be provided through private sessions with courses ideally available in both official languages and CME credits offered for such courses. A process for maintaining competencies must be developed.						ongoing	See note above (#57) re: maintenance of competence.	Will need to establish budget for course tuition. See note above (#57)
59	Level 1, 2 and 3 facilities must have three specialties (focus on Anesthesia, General Surgery and Orthopedic Surgery) onsite or on-call within 30 minutes, 20 minutes for general surgeons.	P						The issue of orthopedic coverage in level 3 facilities is addressed in the body of the report. It is essential, at a minimum, that level 3 facilities have an anesthetist, general surgeon and orthopedic surgeon on call 24/7. The senior management team mandated with responsibility for hospitals in Campbellton, Miramichi and Bathurst will need to ensure that those centres seeking level 3 status have the appropriate human resource infrastructure, and a call system which is configured to meet this requirement. In the consultant's opinion, only two possibilities can be realistically considered. One option would be to ensure a full (minimum of three) complement of surgeons, anaesthetists and orthopods at all three sites. However, it is unlikely that this can or will be achieved as the volume of elective activity is insufficient to support this number of specialists, and the low volume of trauma care provided in each centre would not ensure skill maintenance. Thus it is recommended that one centre (Bathurst is suggested) be designated as the Level 3 centre in the area.	No incremental stipend for on call duties should be paid for "trauma call", but physicians should bill for services provided on a fee for service basis.
60	ATLS training for anesthesia, general surgery and orthopedic specialists in Levels 1, 2 and 3 facilities as well as ultrasound training is recommended.			12				See recommendation 57 above. Ultrasound training requires not only the completion of a fixed number of ultrasounds, but also ongoing use of the skill (25 per year is the minimum). It is doubtful that any orthopedic surgeon or anesthetist will be able to comply with this requirement.	
61	Address the gap in "second call physicians" in several Level 3 and Level 5 facilities.			12			may be difficult to implement	See comments as they pertain to recommendation 56 above. The addition of a required second call system may necessitate a stipend for the provision of the service. The designation of a second call physician is not specific to trauma care- having a physician available to support high volumes of activity, transfers (for any reason), sudden illness or injury of the on call physician are more likely to occur.	If a stipend is to be paid for this responsibility, only some of the cost is attributable to trauma care.
Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other									



#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
62	Criteria for Trauma Leader should include: certification as an ATLS provider; ultrasound training; post graduate training in anesthesia, a surgical specialty, critical care or emergency medicine; interest in the provision of trauma care; demonstrated leadership skills and a willingness to supervise residents and participation in research studies pertaining to trauma care.	P						The eligibility criteria for the trauma team leader role are outlined in the report. It will be necessary to provide a stipend (in addition to the fee for service income generated) for those serving in the trauma team leader role at the level 1 and 2 centres. Owing to the anticipated small volume of patients presenting to level 3 centres, the fee-for-service revenue generated from the provision of care should suffice for income support.	
63	Determining the availability and interest of physicians to participate as TTL be deferred to the next phase of development of the Provincial Trauma Program.	P						(see # 62 above)	Stipend to be negotiated by the NBMS. In addition to the stipend paid, physicians should be allowed to bill fee for service for patients treated.

### 1-800 Trauma Line Sub Committee

64	While both existing systems met the requirements above, MCMC is identified as the preferred system due to its ability to initiate transportation (placing resources on standby or redirecting resources based on real time viewing capability) and their long standing experience in making conference calls between facilities and medical staff.	P						The anticipated annual volume of calls is less than 600-800 per year, and will likely decrease as physicians learn how the system is to be used appropriately. Thus, on average, the number of calls per day will be approximately two and should not necessitate the recruitment of additional staff, but may require some new software or communication tools.	Cost of providing the service to be negotiated- will depend largely on whether additional staff are required or internal reallocation of staff can meet the need.
65	All Level 1, 2 and 3 facilities must have a Trauma Team Leader (TTL) on call 24 hours per day and both the Trauma Control Physician (TCP) and TTL readily available at all times. For Level 1 facilities, the TCP should also be the TTL. The TCP should not have any other professional commitments while on call and would not be "hands on" in trauma cases. TTLs in Level 2 and 3 facilities should have a backup person to cover as TTL if they are not readily available. Additionally, the province should implement a no-refusal policy within the province and establish formal agreements with other provinces such as Quebec and Nova Scotia.	P						While the TCP should not be the sole provider of care in the hospital for his or her discipline, it would be acceptable for this individual to engage in other commitments if there was a designated, appropriately trained individual readily available to assume the TCP role if he or she were engaged in other activities.	TCP to be compensated as TTL
66	The system operator should be required to have minimum levels of education and skills and have basic knowledge of medical terminology related to trauma.	P						These skills are denoted in the full body of the report included in Appendix H.	

Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other

#	Recommendation	Urgency					Notes/Consultant's Comments	Cost Implications
67	Development of an audit system that monitors specified performance parameters and captures the frequency of and reasons for incidents and exceptions. (Details in full report included in Appendix G)			12			Part of role of provincial directors.	

### Trauma Prevention Sub Committee

68	Establish a provincial injury prevention committee that will meet regularly and report to the Department of Health.			12			Trauma Program Committee should establish this committee.	No cost
69	Create a provincial centre responsible for injury prevention and control.			12		ongoing	Initially an individual should be appointed to the role of provincial injury prevention coordinator. See #71 below.	Cost will be salary and benefit cost. Creating a provincial centre may be a longer term objective.
70	Implement the Injury Prevention Strategy developed by the Department of Health, Primary Health Care Branch.			18			As per #71	
71	Each health zone should have a dedicated injury prevention resource. - In the Level 3 sites there is opportunity to expand the role to include education, data collection, quality improvement and prevention. - It is recommended that there be additional funding for a 0.5 RN(3) prevention position in the Level 2 site immediately and in the Level 3 sites within a year of the Trauma System implementation.					May not be feasible	While the importance of injury prevention cannot be overestimated, it is uncertain whether the suggested investment in human resources is necessary to meet the desired objectives. As an alternative, it is suggested that the province appoint a provincial injury prevention coordinator, vested with responsibility for reviewing the recommendations in this report, and determining an appropriate course of action, including a human resource plan to support a provincial injury prevention program. This person should be a member of the Trauma Program Committee and chair a prevention subcommittee.	
72	The Provincial Injury Prevention Committee, Trauma Coordinators and Zone Resources should have access to current local and provincial data.			12			Will require policy granting access to data.	No cost
73	Based on best practice and injury prevention programs, it is recommended that the following programs be available in all health zones in the province: - National Injury Prevention - Falls Prevention Curriculum - P.A.R.T.Y Program - SAFEKIDS - Seniors Safety - THINKFIRST			18			Should be seconded to provincial injury prevention coordinator	

Urgency: P - Pre-Requsite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other

#	Recommendation	Urgency					Notes/Consultant's Comments	Cost Implications
74	It is recommended that the Provincial Injury Prevention Committee advocate for legislative and public policy initiatives that have been implemented in other provinces and countries as well as monitor and communicate policy changes made in the interest of public safety.					ongoing	The consultants suggest that the chair of the committee be a member of and report to the Trauma Program Committee. Once recommendations have been discussed and endorsed at the Trauma Program Committee, they should be forwarded to the Trauma System Advisory Committee and then to the Department of Health for legislative or regulatory change. Once implemented, the initiatives should lead to decreased health delivery costs.	No cost
75	It is recommended that the provincial injury prevention committee review and communicate provincial injury data to increase awareness of changing injury patterns and trends.					ongoing	Should be part of role description of provincial injury prevention coordinator. See above	
76	Develop a communication strategy to enhance communication and public education about injuries and risks.			18		ongoing	component of role of provincial injury prevention coordinator	

#### Trauma Data Sub Committee

77	Participate in the CIHI National Trauma Registry (NTR) and adopt the Comprehensive Data Set from the National Trauma Registry.	P						No cost
78	After 1 year a) add data from the level 3 centres and b) consider adding data from the coroner's office in the PTR.			12				No cost
79	Work with Health Emergency Management Services (HEMS) to provide GEO codes to coders.		6					No cost
80	Develop a Provincial Trauma Registry (PTR) which will feed into the NTR. The Provincial Trauma Registry should be owned by and reside at the Department. The software called "Collector" should be used to capture data. Implement a web-enabled Collector solution/Central-site through a provincial license with a central site "Web Collector" repository at the Department. Review Collector installation at the SJRH and implement at TMH.	P					We have combined several recommendations in the report of the data sub committee into this "merged" recommendation	Acquisition cost of software plus upgrades
81	Facilities collecting data must follow the same data submission deadlines as the DAD thus ensuring access to data throughout the year.	P						No cost
82	The Department should process all data requests in a timely manner at no cost for provincial participants.		6					Part of budget of the Department

Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other

#	Recommendation	Urgency					Notes/Consultant's Comments	Cost Implications
83	The Department should develop guidelines for coders to ensure consistent data collection and data quality.	P					Auditing the performance of coders should be a part of the role of the provincial director.	Will be some costs for developing printing and distributing chart templates
84	The Provincial Trauma Registry (PTR) should initially include cases with an ISS greater than 12.	P						no cost
85	The PTR should expand after one year to include qualifying cases from level 3 trauma centres and new data elements identified as necessary based on continuous evaluation and opportunities to improve the trauma network. Consideration should be given to collecting cases with an ISS above 9 and penetrating wounds.			12				no cost
86	The Department must provide the Provincial Trauma Director with information on trauma transfers out of province annually.			12		ongoing		no cost
87	During the first year, a process should be established to ensure the Department receives notification from the Chief Coroner's office for all non- intentional deaths within 24 hours and for the Registry Manager to review case records twice a year.			12				no cost
88	The Department must hire a full time bilingual Trauma Registry Manager/Data Analyst this fiscal year.	P						Cost of salary and benefits
89	The Department must include training for trauma coders in the Department data quality initiative budget.	P						Minimal training cost
90	The Trauma Registry Manager/Data Analyst will: - be a resource to nurse reviewers; - be part of the permanent trauma advisory committee; - participate on the Trauma Registry Information Specialist of Canada Committee (T.R.I.S.C.) - work closely with the RHA coders, data analysts and nurse reviewers to continuously improve the data; - work closely with CIHI to develop definitions and improve data submissions to the NTR - work with the software vendor to improve the software and have an error free abstract.	P						No additional cost beyond salary and benefits in #92

Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
91	Develop and implement standard trauma templates and a transfer checklist to support good documentation and data collection. The Department, in collaboration with the Trauma Program Director, will support coding by developing: - templates to collect trauma data or charts for trauma patients - standard forms/templates for transfers including a checklist; and monitoring implementation of approved templates in participating facilities.	P						Audit of performance role of Provincial Director. Merges two recommendations in the body of the sub committee report.	May be some costs for developing printing and distributing chart templates.
92	Hire the following staff: - Nurse reviewer at The Moncton City Hospital; - Trauma Registry Manager/Data Analyst at the Department of Health.	P							Cost of salaries and benefits
93	Test and implement needed software in the two reporting facilities.	P						no cost	No cost
94	Fully train the coders, nurse reviewers and the data analyst.	P							Training costs

#### Rehabilitation Sub Committee

95	Each Level 1, 2 and 3 hospital should have a dedicated rehabilitation unit with dedicated non-rotating staff to ensure maintenance of expertise and education.						May be difficult to implement	It is recognized that this objective has both capital and operating implications, and may, as a consequence, be difficult to implement. If, in fact, it proves to be impossible to create dedicated rehabilitation units in each such institution, it would be acceptable, in our opinion, to establish rehabilitation programs which are integrated and comprehensive and ensure high standards of assessment and therapy which is delivered in a timely, integrated, holistic manner. As this process has created a forum for the province's rehabilitation specialists to engage with each other for the first time, the Department may wish to consider establishing a provincial committee focussed on rehabilitation services which may undertake responsibility for this recommendation.	Has both capital and operating implications
96	Moncton City Hospital, Saint John Regional Hospital and Stan Cassidy Centre for Rehabilitation require an on-site physiatrist and a comprehensive array of therapists with special skills for the rehabilitation of trauma patients.. In addition, rehabilitation units should support local arrangements to accommodate families of individuals with prolonged rehabilitation.			12				May require additional training for existing therapists, or , if volumes merit, hiring additional therapists.	Training/hiring costs

Urgency: P - Pre-Requisite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other

#	Recommendation	Urgency						Notes/Consultant's Comments	Cost Implications
97	Each zone within each RHA should have a contact person familiar with rehabilitation resources to organize care and rehabilitation services for patient returning from the trauma centre.		6					"Point person" will need to be identified.	No additional costs
98	RHA A hire an additional bi-lingual physiatrist to help coordinate rehabilitation services		6					Currently there is no physiatrist practicing in the RHA. As his or her workload will only focus to a small extent on trauma patients, the cost of employment should be borne across several services.	Cost to be borne in provincial medical services budget
99	External prosthetic devices be funded in the same was as internal prosthetic devices through the implementation of a formal assistive devices program.						ongoing	Will require political support, then annotating costs and developing budget and roll out plan if supported. This recommendation should be seen as only pertaining to external devices required by patients recovering from trauma.	
100	Comprehensive data collection should be collected by rehabilitation professionals including: cause of injury, age, sex, type of injury, zone of residence, language preference and area in which stabilization occurred. Future data collection efforts should focus on alcohol and drug abuse, use of seatbelt, helmet etc.			12				The recommendations made by the Rehabilitation committee are supported by the data committee and the proposed data set will reflect the data elements identified as essential by the rehabilitation group. However, in the future, a mechanism to ensure that rehabilitation professionals can communicate their need for additional data elements to be included in the data set should be established.	
101	Individuals who have suffered trauma should be followed by a Trauma Coordinator to ensure that they receive appropriate services in the appropriate location.	P							Included in cost of coordinator role
102	Appropriate staffing must be available in Long Term Care facilities so that they are able to meet the complex needs of individuals with severe TBI who cannot be reintegrated into the community.			12				May require additional training for existing therapists, or , if volumes merit, hiring additional therapists.	Training/hiring costs
103	The Department should establish a Rehabilitation Expert Panel to address issues of timely and appropriate rehabilitation.			12					No cost
104	Patients who have suffered severe trauma in New Brunswick should be directed to the facility which can provide appropriate care for their injury.	P						Predicted outcome of provincial trauma program	

Urgency: P - Pre-Requsite    6 - Within 6 Months    12 - Within 12 Months    18 - Within 18 Months    24 - Within 24 Months    X - Other