

EMS SYSTEMS

Primary Care Paramedicine

Module: 06

Section: 01



- Comprehensive network of personnel, equipment, and resources established to deliver aid and emergency medical care to the community.

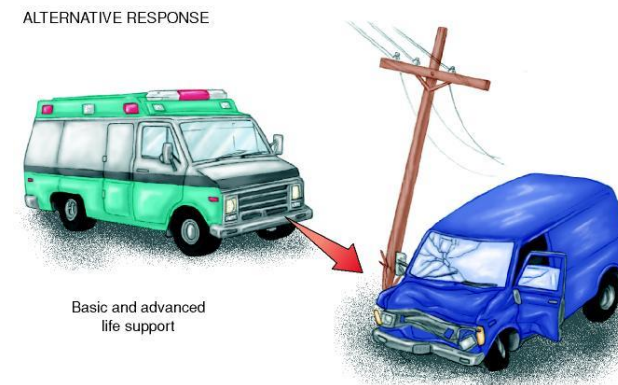
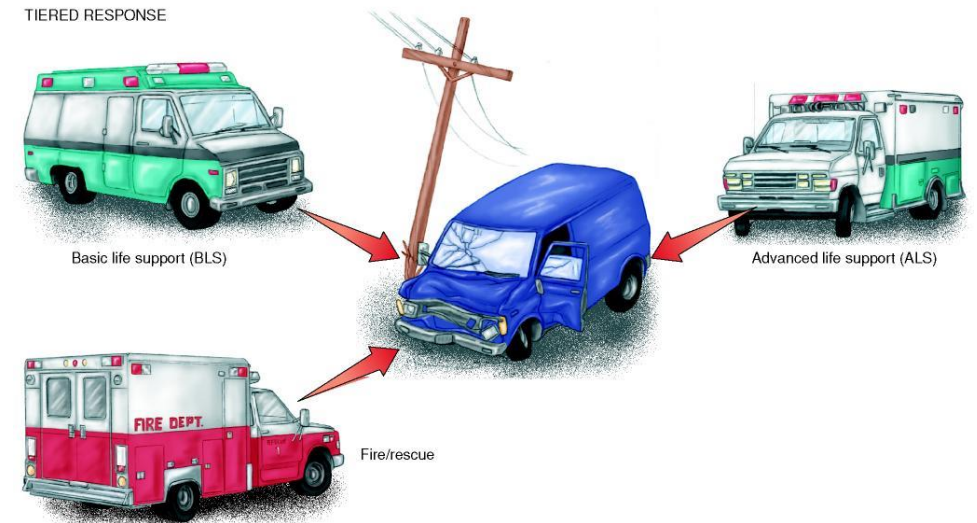
- Members of the community
- Communications system
- EMS providers
- Public utilities
- Poison control centres
- Fire rescue, hazmat

- Emergency nurses
- Emergency and specialty physicians
- Ancillary services
- Rehabilitation services

- Basic life support
- Refers to the basic lifesaving procedures such as artificial ventilation and cardiopulmonary resuscitation.

- Advanced life support
- Refers to advanced lifesaving procedures such as intravenous therapy, drug therapy, intubation and defibrillation.

- Some systems are tiered in which BLS arrives first and then, if required, ALS arrives later.



- Remains a provincial/territorial responsibility
- Each developed their own systems and educational programs
- Most have a mix of basic and advanced life support programs
- There are still large differences in the quality of prehospital care across Canada

- NHTSA established elements necessary to all EMS systems
- Not formally adopted by Canadian EMS systems but often referred to

NHTSA System Requirements

- Regulation and policy
- Resources management
- Human resources and training
- Transport
- Facilities
- Communications
- Trauma systems
- Public information and education
- Medical direction
- Evaluation and quality improvement

- There is no one model for the provision of prehospital care in Canada
- Varies from province to province and even city to city

- Provincial or territorial service
- Municipal, upper tier and regional municipality service
- Health authority and public utility model
- Fire based service
- Hospital based service
- Private operator
- Volunteer service

- Made up of a series of systems within a system
- Integration and cooperation of all participants help ensure the best quality of emergency care

Components of an EMS System

- Medical direction
- Public information and education
- Communications
- Education and certification
- Patient transport
- Receiving facilities
- Mutual aid and mass casualty preparation
- Quality improvement and quality assurance
- Research
- System financing
- Certification and licensing of personnel

- EMS systems must retain a medical director
- A physician who is legally responsible for all clinical and patient care aspects of the system
- Medical care provided by paramedics is considered an extension of the medical director's license
- Delegated Medical Acts

- Educate and train personnel
- Participate in personnel and equipment selection
- Develop clinical protocols in cooperation with expert EMS personnel
- Participate in quality improvement and problem resolution
- Provide direct input into patient care
- Interface between the EMS system and other health care agencies
- Advocate within the community
- Serve as the medical conscience of the EMS system including advocating for patient care

- When a qualified physician gives direct orders to a prehospital care provider



- Refers to medical policies, procedures, and practices that the medical director has set up in advance of the call
- Includes both prospective and retrospective elements

Prospective

- Guidelines on selection of personnel and supplies
- Training and education
- Protocol development

Retrospective

- Auditing
- Peer review
- QA



Unresponsive
No breathing or
no normal breathing
(only gassing)

Activate
emergency
response



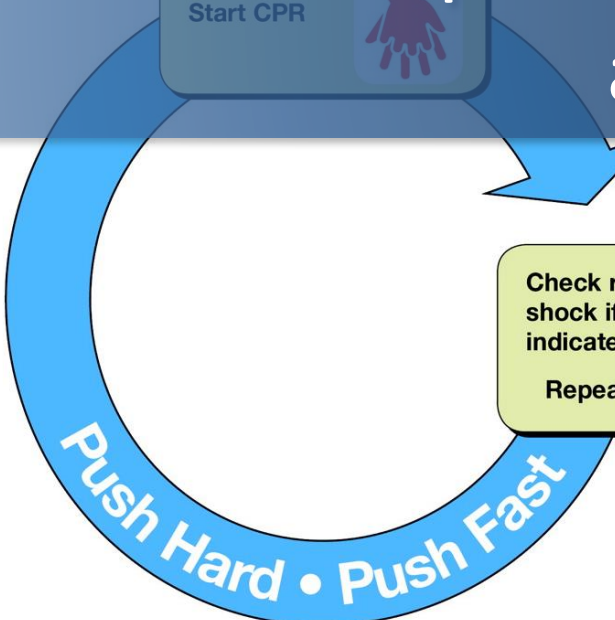
Get
defibrillator



Start CPR



Check rhythm/
shock if
indicated
Repeat every 2 minutes



Protocols are the policies and procedures for all elements of an EMS system.

- Protocols are designed around the four T’s of emergency care.
 - Triage
 - Treatment
 - Transport
 - Transfer

- An essential and often overlooked component of EMS is the public.
- EMS systems should develop plans to educate the public on recognizing an emergency.
 - Accessing the system.
 - Initiating BLS procedures.

- A coordinated, flexible communications plan should include:
 - Citizen access
 - Single control center
 - Operation communication capabilities
 - Medical communication capabilities
 - Communications hardware
 - Communications software

- The ideal communications centre can communicate with and control the movement of all emergency units within an EMS system



Emergency Medical Dispatcher (EMD)

- The activities of an EMD are crucial to the efficient operation of EMS.
- EMDs not only send ambulances to scenes, they also make sure that system resources are in constant readiness.
- EMDs must be medically and technically trained.

- Major goal to locate and implement plans for quick and reliable response coverage
- Continuous coverage of response areas
- Reevaluated on a consistent basis

- Two kinds of EMS education are:
 - Initial education
 - The original training course for prehospital providers.
 - Continuing education
 - Programs include refresher courses for recertification and periodic in-service training sessions.

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- Airway and breathing
 - Hemorrhage control
 - Fluid resuscitation
 - Temperature control
 - Pharmacological intervention

Once the initial education is completed, the paramedic will become either certified or licensed.

- A requirement in many provinces to practice
- Requirements
 - Successful completion of a course of education for the level of registration
 - Completion of a regulatory exam

- Formed in 1988
- Canada's only national EMS organization representing prehospital practitioners
- Currently represents over 14 000 members

- Regulation and delivery of EMS services are governed by provincial and territorial bodies
- Exception is the Canadian Armed Forces which is federal
- NOCP provides governing bodies a way to compare programs from different jurisdictions

- Education:
 - Voluntary accreditation program established by the Canadian Medical Association (CMA)
 - Uses the NOCP to establish levels of accreditation
 - NOCP also identifies the performance environment in which competencies should be evaluated at each level (clinical, field, etc.)

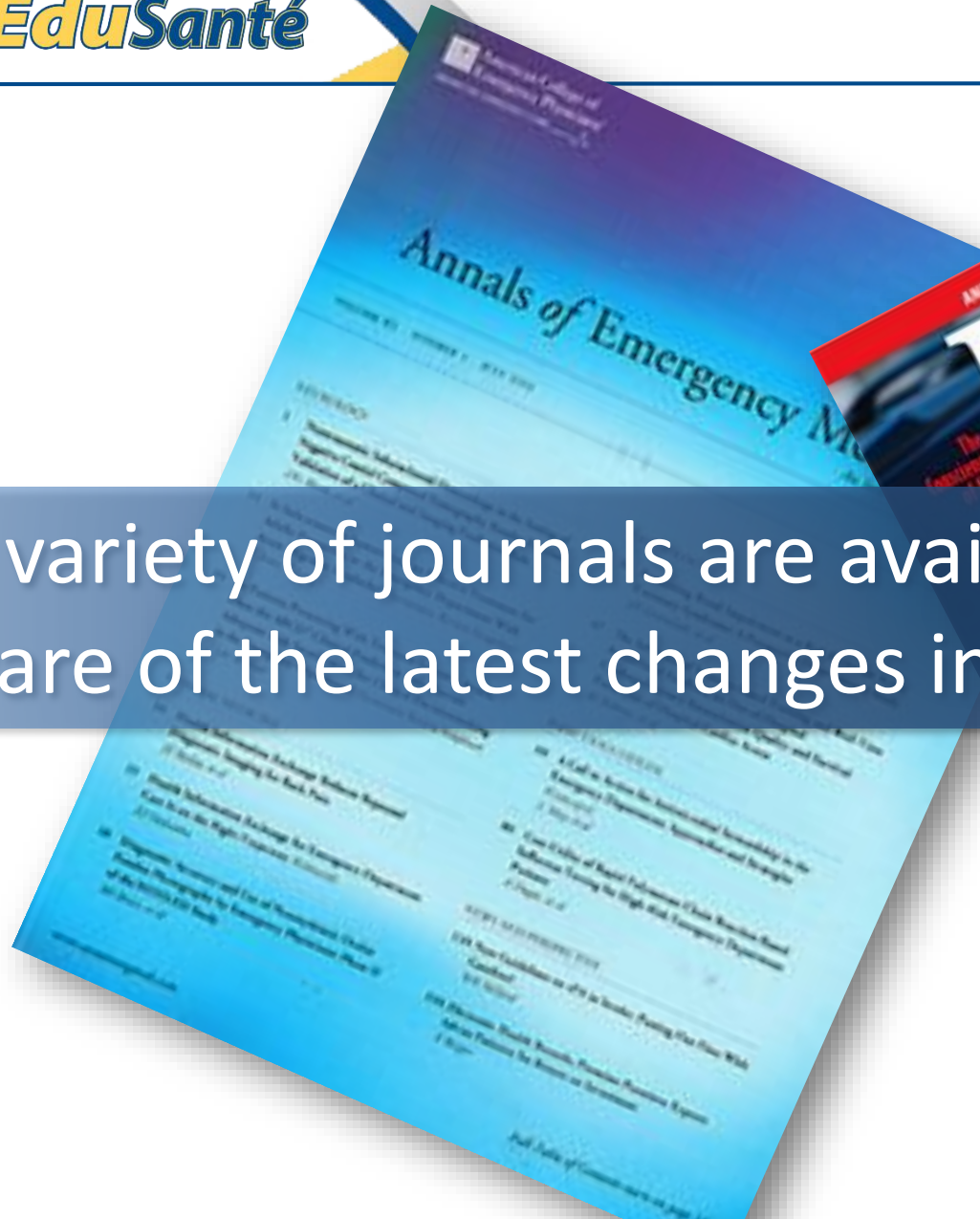
- Ground Ambulance
 - Commission on accreditation of ambulance Services (CAAS)
- Air Ambulance
 - Commission on accreditation of medical transport systems (CAMTS)
- Communications
 - National academies of emergency dispatch (NAED)



Belonging to a professional organization is a good way to keep informed about the latest technology.

- Ambulance Paramedics of British Columbia
- Alberta College of Paramedics
- Saskatchewan Paramedic Association
- Paramedic Association of Manitoba Inc.
- Paramedic Professional Association of Quebec/Association Professionnelle des Paramedics du Quebec
- College of Paramedics of Nova Scotia
- Paramedic Association of New Brunswick
- Paramedic Association of Prince Edward Island
- Paramedic Association of the Yukon

A variety of journals are available to keep the paramedic aware of the latest changes in this ever-changing industry.



- Annals of Emergency Medicine
- EAU FAU Magazine
- Emergency Medical Services
- Canadian Emergency News
- Emergency
- Journal of Emergency Medical Services
- Journal of Emergency Medicine
- Prehospital Emergency Care

- Patients should be taken to the nearest facility whenever possible.
- Medical direction and patient condition should designate the facility.
- Patients may be transported by ground or air.

- Type I
 - Conventional cab and chassis on which a module body is mounted
 - No passageway between driver and patient compartments
- Type II
 - Standard van, body and cab form an integral unit
 - Most have a raised roof
- Type III
 - Specialty van with forward cab, integral body and passageway between driver and patient compartment

A Type-I Ambulance



A Type II Ambulance



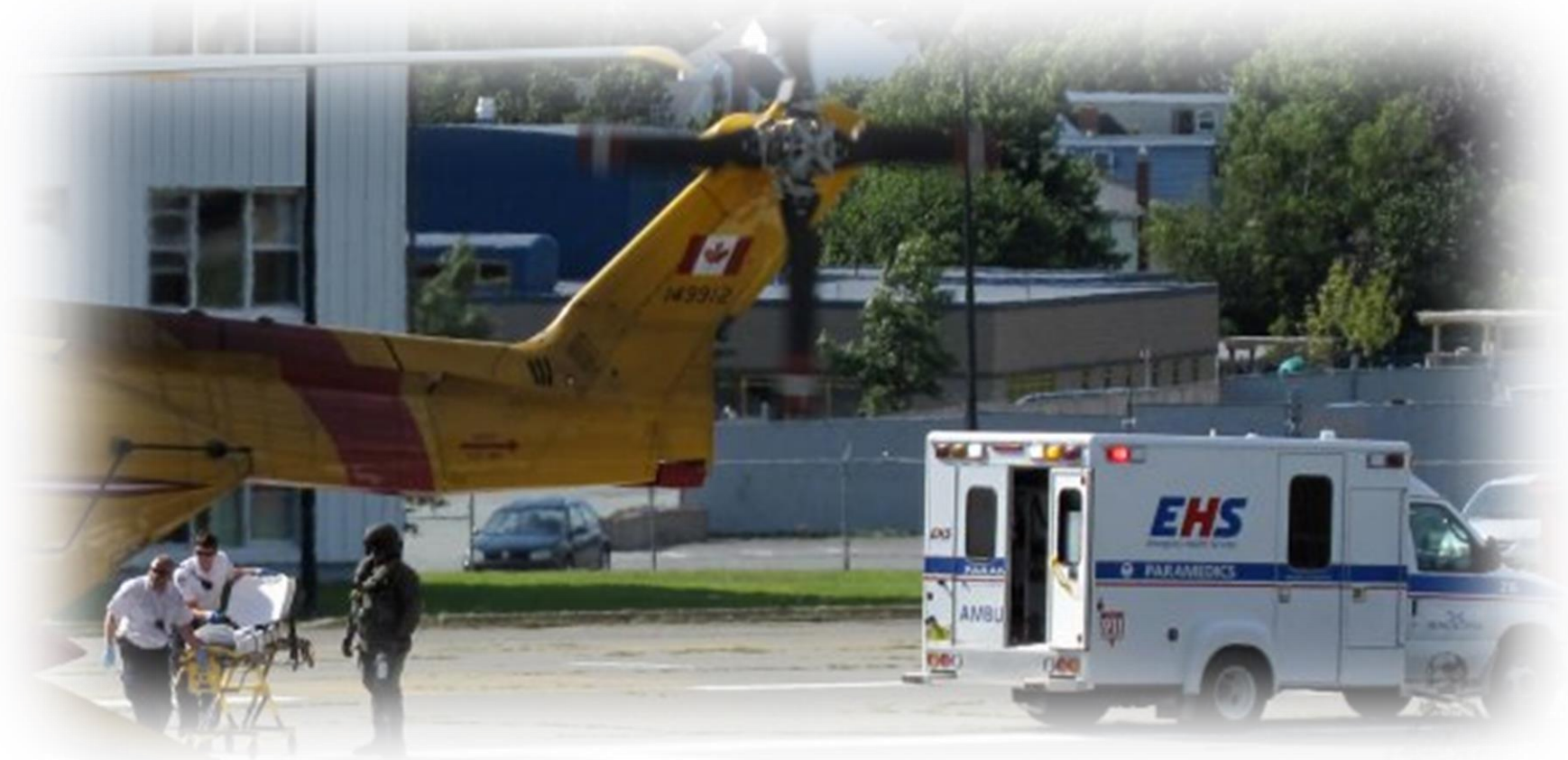
A Type III Ambulance



- The helicopter has become an integral part of prehospital care.



- Military helicopters frequently assist civilian EMS systems.



- Not all receiving facilities are equal in emergency and support service capabilities. Local systems and regions categorize hospitals based on capabilities.



- Tertiary Trauma Centre
 - Regional referral center for critically injured patients
 - 24 hour trauma response team
- District Trauma Centre
 - May function as a trauma center in smaller communities or support a tertiary center
 - 24 hour response to provide prompt resuscitation and care for trauma patients
- Primary Trauma Centre
 - Usually a smaller rural medical center or nursing station
 - Provides initial triage but refers all but most minor cases

Mutual Aid and Mass-Casualty Preparation

- A formalized mutual aid agreement ensures that help is available when needed.
- Agreements should be between neighboring departments, municipalities, systems, or provinces/territories
- Each system should also put a disaster plan in place for catastrophes that can overwhelm available resources.

- An EMS system should have a disaster plan in place that is practiced frequently.



- Quality Improvement is a formal approach to the analysis of performance and systematic efforts to improve it.
- This includes:
 - Leadership
 - Information and analysis
 - Strategic quality planning
 - Human resources development and management
 - EMS process management
 - EMS system results
 - Satisfaction of patients and stakeholders

- Quality Assurance (QA)
 - Designed to maintain continuous monitoring and measurement of the quality of clinical care.
- Continuous Quality Improvement (CQI)
 - Designed to refine and improve an EMS system, emphasizing customer satisfaction.


- An EMS system must be designed to meet the needs of the patient.
- Therefore, the only acceptable quality of an EMS system is EXCELLENCE!

- People must be able to take for granted that:
 - EMS will respond quickly
 - Act at the highest level of professionalism
 - Provide safe and appropriate care

- New medications, processes or procedures introduced based on the rules of evidence
 - There must be theoretical basis for change.
 - There must be ample research.
 - It must be clinically important.
 - It must be practical, affordable, and teachable.

- Also accomplished by the ongoing training of personnel
- Peer review
 - The process of EMS personnel reviewing each other's actions and interactions with patients.

- Ethics
 - The standards that govern the conducts of a group or profession.
- All levels of practitioner have an ethical responsibility to their patients and the public



Customer satisfaction can be created or destroyed with a simple word or deed.

- Clinical performance with Economical performance
- The priorities revolve around:
 - Quality patient care
 - Quick response time
 - Cost effective
 - Consumer expectations being met
 - Continuously measured
 - Results achieved

- Research programs are essential for moral, educational, medical, financial, and practical reasons.
- Future EMS research must address the following issues:
 - Which interventions actually reduce morbidity and mortality?
 - Are the benefits of a procedure worth the risk?
 - What is the cost-benefit ratio?

- Components of a research program
 - Identify a problem.
 - Identify the body of knowledge on the subject.
 - Select the best design for the study.
 - Begin the study and collect raw data.
 - Analyze the data.
 - Assess and evaluate the results.
 - Write a concise, comprehensive description of the study for publication in a medical journal.