Advanced Care Paramedicine Program Profile

Property of:

Medavie Health Ed
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STATEMENT OF BELIEF

Medavie HealthEd is an owned and operated subsidiary of Medavie Health Services (MHS) and was established in 2012 consolidating two professional training schools that previously operated respectively as the Maritime School of Paramedicine (MSOP) and the Atlantic Paramedic Academy (APA). Our institution is recognized, by the provincial regulators, as a Private Educational Institution, in both New Brunswick and Nova Scotia; and our programs are accredited through Accreditation Canada.

Established in 2001, Medavie HealthEd exemplifies a commitment to education, and professional development. The School and its staff strive toward the development of graduates who possess sound knowledge and skills, a commitment to excellence in all they do, and a deep sense of professionalism and caring.

Medavie HealthEd believes that the campus environment should promote human dignity, mutual respect, justice, security of the person, and ethical behavior. We further believe it should provide guidance and positive role models for its students.

PROFILE OF THE GRADUATE

The profile of the graduate is general in scope and is intended to provide a conceptual framework from which the learning needs of the student and the performance requirements of the graduate will be based.

The graduate of the program will become an essential link in the "chain of survival" and the "continuum of care" by providing pre-hospital life support to patients in both emergency and non-emergency situations.

Due to unforeseen circumstances and the unstable nature of many patients, the graduate must consistently demonstrate a high degree of critical thinking based on sound knowledge, assessment and problem solving skills.

Building on knowledge and skill gained in assessment, evaluation and interpretation, the graduate applies his/her knowledge and skills to formulate a provisional field diagnosis. Graduates also, provide patient management through approved BLS protocols in a timely manner with a high degree of accuracy and consistency.

The program graduate develops sound communication skills that allow for effective patient interviews, communication with family members/public and other emergency service personnel such as police and fire personnel. Graduates ensure the continuity of care by effectively communicating with emergency department personnel including nurses and physicians.

The qualities of the graduate include a strong commitment and dedication to the profession, along with a unique ability to show leadership with compassion. The graduate's sense of satisfaction in making a difference results from strength of character and the knowledge that he/she is responding to each call with integrity and professionalism.

Legal requisites and ethical principles direct all elements of the graduate's practice.

ACADEMIC MISSION STATEMENT

Medavie HealthEd is dedicated to serving the community by assisting students to acquire skills and knowledge relevant to employment and personal growth. We are committed to a philosophy of education and training that:

- Ensures openness and accessibility for those who wish to learn
- Seeks to provide appropriate means of meeting individual learning needs
- Includes programs ranging from basic first aid to Paramedicine
- Ensures the standards established for programs are accurately expressed in course outlines and addressed through effective teaching
- Evaluates student achievement to ensure that required learning identified by the program standards has occurred
- Provides for ongoing review of the quality and relevance of all programs
- Promotes resourcefulness, personal initiative, independence, and positive attitudes toward lifelong learning

The Advanced Care Paramedic Program is dedicated to providing its graduates with the knowledge and skills necessary to deliver the highest standard of care possible to the public, whose interest we serve.

Graduates will not only receive a sound overall knowledge in pre-hospital emergency medicine, including pathophysiology, but will also acquire the skills of critical thinking and problem-solving in patient assessment and management.

Emphasis is placed on providing a professional approach to all aspects of the program. The program is designed to integrate leadership skills into a team approach to the delivery of primary patient care. The goal is to ensure quality patient management through a ***continuity of care*** based on an understanding of the roles of all Emergency Medical Service providers from dispatch, to first responders (volunteers, fire, and police services), paramedics (BLS and ALS) and all hospital staff including nurses and physicians.

The health care field is continually changing and evolving. As a result, Medavie HealthEd graduates develop the skills necessary to stay current with the changes in their chosen profession, as well as the ***ability to adapt to the demands*** of time.

PROGRAM FOCUS

The students of our program will experience three types of learning experiences:

- The acquisition of basic concepts and theories
- The mastery of professional skills
- The attainment of attitudes appropriate to one's role as a health professional.

One of the program's most important goals is that of preparing students to carry out a lifelong commitment to learning as a lifestyle. As a result, there is a strong emphasis within the program for students to develop self-directed learning skills and to view the faculty as facilitators and academic advisors.

The medical field is forever changing, evolving and updating. The program is therefore dedicated to cultivating a love of learning itself. The responsibilities of Paramedics have increased dramatically over recent years and it is no longer acceptable to simply accumulate a set amount of knowledge and skills. Today's students must have an inquisitiveness and sense of adventure in discovering the contours of an unknown horizon so that he/she moves toward becoming an expert; it will become a way of life that will help ***assure a lifetime of challenge and enrichment.***

CERTIFICATION AND LICENSING

Our program has been approved by and meets the competency requirements of Emergency Health Services of Nova Scotia, the Paramedic Association of New Brunswick, as well as the National Occupational Competency Profile for Advanced Care Paramedics, as established by the Paramedic Association of Canada.

Graduates will receive a diploma in Advanced Care Paramedicine from Medavie HealthEd, upon successful completion of the program.

FINANCES (PROGRAM COSTS)

The cost of the Advanced Care Paramedic Program will always include:

- Registration Fees(is applied to overall tuition)
- Tuition Fees
- Books/Texts/Manuals Fees (incl. applicable taxes)
- Uniform Fees
- Graduation
- Insurance Fee

Please contact the office for an up to date fee.

Additional expenses *Students may be required to complete their hospital and/or ambulance clinical rotations outside the immediate area of the campus or program delivery site the student is attending. Any and all costs incurred by the student for hospital and/or ambulance clinical rotations will be his/her responsibility*

Students are responsible of tuition fees, books/manuals and photocopying while in the classroom.

While on clinical and ambulance practicum rotations students will be required to wear their uniform, normally this will consist of the white shirt, cargo pants, jacket, and boots. When attending clinical rotations the student may wear black shoes or sneakers.

Students are responsible for their own living, travelling and parking expenses while attending the didactic, clinical, and ambulance practicum portions of the program.

They must also be aware that they may be required to reside in another part of the province or country to attend their clinical and ambulance practicum rotations.

LIABILITY AND INSURANCE

The student is insured under a comprehensive liability insurance policy. If further documentation is required by the student they may ask for the information from the program instructor.

EXEMPTION OR ADVANCED STANDING

Exemptions and advance standing shall not be granted for any portion of the course content, regardless of any previous training the student may have obtained.

EVALUATION AND PROMOTION POLICY

The student is consistently provided with feedback on quizzes and tests. All students are entitled to review their quizzes and tests to ensure accurate marking. By having this access it is understood that a student should know their progress as it relates to the didactic component of the program.

In the lab setting students are provided with instant feedback from the facilitators and therefore have a clear indication on how they are progressing in the lab setting.

Once a student moves to the clinical and practicum components they will receive feedback on a regular basis from their preceptors.

Students with marginal or failing grades will be advised of their standing and receive recommendations in order to meet program requirements.

Students must achieve a mark of 80% or better on all tests and exams in order to graduate.

Please review the most current policy regarding evaluations in the Policy and Procedure Manual.

SUPPLEMENTAL PRIVILEGES

The Course Instructor may grant, limit or deny supplemental privileges, at their discretion, after having assessed a student's progress through the program and his/her chances of success.

Supplemental privileges will ***not be granted*** in the event that a student is unsuccessful in the following instances or courses:

1) Completing two of four skills or scenarios in the lab setting

2) Obtaining a mark which is more than Twenty (20) points below the passing grade.

3) Obtaining an 80% in a course being repeated by a student.

Note:

Supplement examinations will normally be scheduled within five (5) days from the time the student is notified of his/her failure.

A maximum of three (3) supplemental tests will be granted during the enrollment of the student in the program; these rewrites include the Mid-term and final exams.

Supplements will be denied if attendance requirements are not met and or assignments and projects were not satisfactory and handed in on time.

Please review the most current policy regarding supplemental privileges in the Policy and Procedure Manual.

Policy on Patient Care Lab Evaluations Re: Critical Objectives

Critical objectives will be defined during the course of studies in Patient Care Procedures. The following rules will apply to subsequent grading of tests:

A maximum of one supplemental exam will be granted during the enrollment of the student in the program for Scenario Evaluations (Medical or Traumatic).

Physical disabilities must not prevent the student from communicating with patients, making observations, gathering and analyzing data necessary to arrive at medical judgments, and performing therapeutic interventions, lifting and moving patients, which are all expectations of a paramedic. Note the physical environment in which a paramedic is expected to work is varied and unpredictable.

ATTENDANCE REQUIREMENTS

In order to graduate students must attend the minimum requirements as described in the policy and procedures manual.

In order to graduate students must attend a minimum:

1) 90% of all in class sessions didactic (60% must be live and 40% must be watched within the week of the material being taught.
2) 90% of all lab sessions must be attended.
3) 100% of all clinical placements (Hospital and ambulance practicum)

Please review the most current policy regarding attendance requirements in the Policy and Procedure Manual.

Missed clinical time will need to be made up and the student may be required to pay the cost of doing so. Clinical time is not guaranteed if the student fails to attend their rotations.

It is essential for students to stay current and maintain their base knowledge. If a student has been unsuccessful in progressing to the next level and is interested in continuing the following year, the student will be required to repeat all components of the program.

A student, who has been unsuccessful, is permitted to enter the program in the following year.

PROGRAM WITHDRAWAL DUE TO PROFESSIONAL MISCONDUCT

Successful paramedics display discipline, maturity, and respect at all times. They are also required to take responsibility for their own actions. The list of behaviors below reflects this general definition of professional conduct. The list is meant to be exemplary, not exhaustive. Failure to display these behaviors toward peers, clients, faculty, and the public will result in academic discipline. All incidents of misconduct will be documented. All incidents will result in immediate suspension from the program. A review of the incident will be conducted within 5 working days. Academic probation, remediation, withdrawal, or reinstatements are all possible outcomes dependent on the seriousness of the infraction. Three incidents of minor misconduct throughout the program will result in program withdrawal. Behaviors indicative of professional conduct include (but are not limited to):

1) Neat, clean appropriate dress and personal hygiene;

2) Addressing clients, classmates and college staff in a courteous manner i.e. voice volume, inflection, use of appropriate titles, use of appropriate vocabulary, use of appropriate nonverbal communication cues etc.;

3) Awareness of the need for privacy when information is discussed and confidentiality of information received;

4) Gracious acceptance of constructive criticism i.e. can discuss differences of opinion without defensiveness, rationalization, hostility or breakdown;

5) Maintaining a positive, constructive and productive attitude at all times;

6) Maintaining knowledge, skills, and good judgment in the performance of his/her duties.

Major infractions leading to withdrawal from the program based on a single incident includes but is not limited to theft, threats, violence, harassment, intoxication, deceit, cheating, and misrepresentation.

Given the nature of the roles and responsibilities of the Paramedic it is essential to maintain the highest standard possible, in order to ensure the safety and wellbeing of Medavie HealthEd, professional agencies and patients.

LEARNING MODEL AND LEVEL OF UNDERSTANDING

The learning model used in the program is based on an integrated progression through three levels of development. They are:

1) **Knowledge Base** – involves memorization and recall of information building towards interpretation and comprehension.

2) **Application** – involves analysis and synthesis of information with the ability to differentiate and discriminate.

3) **Problem Solving** – involves evaluation and critique of information where the critical thinking process will lead to making sound judgment in new situations.

This model will allow the student to move from a literal understanding of facts to being able to draw conclusions from the information and subsequently, to see how ideas and concepts are similar so that they can be applied in related circumstances.

It is the student's responsibility to learn and master the material/skill, and the instructor's responsibility to facilitate the learning process.

PROGRAM LEARNING OUTCOMES

The graduate of this program will be able to reliably demonstrate his/her ability to:

1. **Assess:**

    1.1. Utilize critical thinking skills to adapt the processes of data gathering in order to provide a comprehensive assessment of the patient.

    1.2. Describe, demonstrate and provide rationale to explain the findings of advanced assessment to determine the nature of the patient's condition.

    1.3. Maintain a high index of suspicion and utilize advanced assessment skills in the continuous process of gathering assessment data.

2. **Interpret/Prioritize:**

    2.1. Determine critical judgment paths on analysis of data collected and approved treatment protocols.

    2.2. Determine the nature of the patient's condition based on interpretation of assessment findings.

    2.3. Select priorities of care based on logical sequential treatment protocols.

3. **Implement:**

    3.1. Initiate safe and appropriate delivery of basic and advanced life support standards and protocols in a timely manner based on assessment findings.

    3.2. Utilize critical decision processes in adapting care and treatment to specific patient situations within approved guidelines.

    3.3. Practice ethically and legally in performance of responsibilities.

    3.4. Advocate for the patient, assessing the best possible pre-hospital care by maintaining the right of the patient to dignity, privacy, confidentiality and consent to treatment.

    3.5. Performs sanctioned medical acts under the direction of the Program Medical Director

4. Evaluate:

4.1. Ensure continuous assessment of the patient and the need for monitoring in order to maintain patient viability and adapt care and treatment according to assessment findings.

4.2. Evaluate one's own effectiveness in advanced assessment technique, prioritization of care and implementation of basic and advanced life support standards and protocols.

5. Communicate:

5.1. Effectively communicate and collaborate with other health care team members to effect continuity of care in the "chain of survival".

5.2. Utilize therapeutic communication techniques for patients when carrying out care and treatment protocols.

5.3. Recognize job-related stress and utilize effective management techniques.

5.4. Help shape the future of the Emergency Medical System through participation with research activities and commitment to high quality patient care.

PROGRAM PHILOSOPHY

The Advanced Care Paramedic program is dedicated to building confident, self-directed learners who can adapt to the needs of an ever-changing workplace. In order to meet this challenge, the program is committed to excellence in education using the following values as its foundation:

Trust - We believe that trust reduces fear and inspires confidence. Trust, honesty and fairness are essential to quality care and supportive relationships.

Respect - We believe in and respect the uniqueness, diverseness, and dignity of each person. We treat each other with honesty and compassion.

Communication - We believe that ongoing and open communication is essential. Communication contributes to personal well-being and the efficiency of the program.

Team Work - We believe that teamwork and a spirit of cooperation are vital to achieve our common goals.

Conflict Resolution - We believe that conflict is healthy. When conflict occurs, we believe we have the right to express and the duty to hear different points of view in a way that respects individual dignity and self-esteem.

Recognition - We believe the personal recognition fosters a spirit of pride, self-esteem, and dignity. Each individual's contribution should be valued, acknowledged and rewarded.

Environment - We are committed to providing a safe and friendly environment in which to live and work. We believe that the most productive environment is one, which creates and maintains a positive atmosphere.

Responsibility and Accountability - We believe that we are all responsible for the efficient and effective use of time and resources. We are accountable to each other and responsible for living out of core values.

In summary, the program places a heavy emphasis on both students and faculty committing themselves to personal responsibility and the representation of a professional attitude in all areas concerning the program. It has been said of emergency personnel that at times, in the course of their job, "their life is on the line". This has certainly been true for certain calls; however, for all calls "their character is on the line". Personal integrity and strength of character are essential to the role of the paramedic and are fostered in the Advanced Care Paramedic program from the day of enrolment to the day of graduation.

Tuition Refund Policy

The Tuition Refund Policy is based on the regulations established by the provincial regulators, in both New Brunswick and Nova Scotia.

Please contact the office for the most up to date Tuition Refund Policy, or reference your enrollment documentation.

Section 2

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Advanced Care Paramedic
Module 1

Foundations of Paramedicine

Module 01 Foundations of Paramedicine

With this module the student will become familiar with the applicable and relevant legislation pertaining to personal and patient safety, confidentiality and paramedicine. The student will also examine concepts of problem solving to help with their decision process when presented with ethical dilemmas in the field.

Section	Topic	
1	History of EMS	
2	Roles and Responsibilities	
3	EMS Systems and Operations	
4	Legal Issues in EMS	
5	Ethical Issues in EMS	
6	Leadership and Communications	
7	Patient Safety for Paramedics	
8	Research	
9	Introduction to the Human Body	
10	Chemistry, Matter and Life	
11	Cells	
12	Tissue	

Time Requirements:

Didactic:	Class		
		In Class	18
		Self-Directed Learning	22
		Total	40
Lab:	Practice		24
		In-class Total	64

Reference Materials: Paramedic Textbook
Medical Terminology Textbook
Non-Violent Crisis Intervention Manual

Section 01 History of EMS

1. Identify the key figures involved in the development of EMS worldwide.
2. Understand changes that have occurred to EMS systems worldwide from the early days of pre-hospital care to present day EMS.
3. Describe the characteristics of EMS in Canada. (**NOCP 1.1.g**)
4. Analyze strengths and weaknesses of EMS in Canada. (**NOCP 1.1.g**)
5. Identify professional associations for paramedics in Canada. (**NOCP 1.1.h**)
6. Discuss participation in professional associations. (**NOCP 1.1.h**)
7. Describe the role of professional associations. (**NOCP 1.1.h**)
8. Acknowledge the benefits of participation in, and describe the role of professional associations. (**NOCP 1.1.h**)
9. Analyze common quality assurance and enhancement process. (**NOCP 1.1.f**)
10. Discuss importance of continuous quality assurance and continuous quality assurance programs as they relate to EMS systems. (**NOCP 1.1.f**)

Section 02 Roles and Responsibilities

1. Description of the profession
2. Define “patient advocacy”. (**NOCP 1.1.j**)
3. Discuss ``accountability``
4. Discuss the National Occupational Competency profile and how it relates to practice.
5. Describe professional development. (**NOCP 1.2.a**)
6. Evaluate professional development options. (**NOCP 1.2.a**)
7. Understand the importance of and promote professional development. (**NOCP 1.2.a**)
8. Define “patient advocacy”. (**NOCP 1.1.j**)
9. Discuss the importance of and the implementation of patient advocacy. (**NOCP 1.1.j**)
10. Explain ways in which a prehospital practitioner can serve as a patient advocate. (**NOCP 1.1.j**)
11. Understand the importance of and promote patient advocacy. (**NOCP 1.1.j**)
12. Adapt to work cooperatively as a team member. (**NOCP 1.5.a**)
13. List the components of a balanced healthy lifestyle. (**NOCP 3.1.a**)
14. Identify and discuss some personal support systems which promote the maintenance of physical and mental health. (**NOCP 3.1.b**)
15. Describe the benefits of a personal support system. (**NOCP 3.1.b**)
16. Describe and choose personal activities/habits which promote a balanced, healthy lifestyle.(**NOCP 3.1.a**)
17. Value the benefits of a personal support system (**NOCP 3.1.b**)
18. Identify and apply appropriate dress for situation and environment. (**NOCP 1.1.c**)

19. Identify and apply characteristics of appropriate appearance and personal hygiene. (**NOCP 1.1.c**)
20. List the effects of shift work on physical and mental health. (**NOCP 3.1.d**)
21. Describe strategies to promote physical and mental health. (**NOCP 3.1.d**)
22. Choose strategies to promote physical and mental health. (**NOCP 3.1.d**)
23. Describe the physical capabilities required of an EMS practitioner. (**NOCP 3.1.e**)
24. Describe strategies to develop and maintain physical strength and fitness. (**NOCP 3.1.e**)
25. Choose strategies to develop and maintain physical strength and fitness. (**NOCP 3.1.e**)
26. Demonstrate adequate strength and fitness. (**NOCP 3.1.e**)
27. Define safe biomechanics. (**NOCP 3.2.a**)
28. Describe potential injuries common to EMS practitioners. (**NOCP 3.2.a**)
29. Describe strategies to reduce risk of injury. (**NOCP 3.2.a**)
30. Choose strategies to reduce the risk of injury. (**NOCP 3.2.a**)
31. Adapt proper lifting techniques. (**NOCP 3.2.a**)
32. Participate in injury prevention and public safety activities and initiatives. (**NOCP 8.1.b**)
33. Explain the purpose of injury prevention and public safety initiatives. (**NOCP 8.1.b**)
34. Analyze common injury prevention and public safety initiatives. (**NOCP 8.1.b**)
35. Modify injury prevention strategies for individuals, households, workplaces and communities. (**NOCP 8.1.b**)

Section 03 EMS Systems and Operations

1. List other members of the health care team. (**NOCP 8.1.c**)
2. Describe the roles and the relationship to other health care professionals. (**NOCP 8.1.c**)
3. Value working collaboratively with other health care professionals (**NOCP 8.1.c**)
4. Demonstrate collaborative work with other health care professionals (**NOCP 8.1.c**)
5. Understand the importance of professionally collaborating with other health care practitioners. (**NOCP 1.5.d**)
6. Identify the various other emergency response agencies associated with an EMS system / agency. (**NOCP 8.2.a**)
7. Examine associated agencies relating to Emergency Services (**NOCP 8.2.a**)
8. Identify common community support programs as they relate to EMS (**NOCP 1.1.g, 3.1.b**)
9. Discuss situations that may require assistance from available community support programs. (**NOCP 1.1.g, 3.1.b**)
10. Discuss related legislative requirements (**NOCP 1.4.a**)
11. Discuss the need for additional interventions (**NOCP 1.1.g**)
12. Describe how to communicate this information and options to the patient. (**NOCP 2.1.d**)
13. List and describe the roles of and relationship of prehospital practitioners to other emergency response agencies and their providers. (**NOCP 1.5.c, 8.2.a**)
14. Discuss the role of and importance of mutual assistance and tiered response, and compare the efficacy and implementation of each. (**NOCP 1.5.c, 8.2.a**)
15. Value collaborative work with other emergency response agencies (**NOCP 1.5.c, 8.2.a**)
16. Perform collaborative work with other emergency response agencies (**NOCP 8.2.a**)

17. Integrate teamwork into the provision of care. (**NOCP 1.5.a**)
18. Discuss characteristics of interpersonal relationships (**NOCP 1.5.a**)
19. Identify sources of research evidence and statistics (**NOCP 1.2.c**)
20. Describe the process of conducting a literature search. (**NOCP 1.2.c**)
21. Explain the importance of research as it applies specifically to the field of EMS and as well to health care in general. (**NOCP 1.2.c**)
22. Understand the importance of research applicability. (**NOCP 1.2.c**)
23. Evaluate research evidence. (**NOCP 1.2.c**)
24. Identify components of a vehicle maintenance check. (**NOCP 7.1.a**)
25. Identify components of a safety check. (**NOCP 7.1.a**)
26. Perform a maintenance check. (**NOCP 7.1.a**)
27. Perform a safety check. (**NOCP 7.1.a**)
28. List the conditions when a vehicle should be removed from service. (**NOCP 7.1.b**)
29. Explain the purpose of all vehicle equipment. (**NOCP 7.1.c**)
30. Explain the purpose of all vehicle devices. (**NOCP 7.1.b**)
31. Operate vehicle equipment correctly. (**NOCP 7.1.b**)
32. Operate all vehicle devices correctly. (**NOCP 7.1.b**)
33. Describe and apply the principles of defensive driving. (**NOCP 7.2.a**)
34. Distinguish between driving characteristics of an ambulance and a passenger vehicle. (**NOCP 7.2.b**)
35. Distinguish between emergency driving and driving under normal conditions. (**NOCP 7.2.b**)
36. Apply appropriate driving techniques. (**NOCP 7.2.b**)
37. Describe relevant legislative requirements regarding the operation of an emergency vehicle. (**NOCP 7.2.b**)
38. Discuss potential reactions from other drivers. (**NOCP 7.2.b**)
39. Describe driving techniques for maximizing a safe work environment **(NOCP 7.2.c)**

Section 04 Legal Issues in EMS

1. Discuss legislative and regulatory requirements related to patient confidentiality. (**NOCP 1.1.e**)
2. Acknowledge conduct necessary to maintain patient confidentiality. (**NOCP 1.1.e**)
3. Identify information that should and should not be communicated to the patient.
4. List the components of effective verbal communication. (**NOCP 2.1.b**)
5. Identify the legislative requirements in regards to patient rights. (**NOCP 1.3.b**)
6. Discuss legislation, policies, and procedures. (**NOCP 1.4.a**)
7. Acknowledge the importance of legislation, policies, and procedures. (**NOCP 1.4.a**)
8. Discuss legal issues pertaining to patient rights. (**NOCP 1.3.b**)
9. Recognize the importance of and promote patient rights. (**NOCP 1.3.b**)
10. Define “Scope of practice” (**NOCP 1.3.a**)
11. Discuss the role of Online Medical Control. (**NOCP 1.3.a**)
12. Discuss protocols, standing orders, and directives. (**NOCP 1.3.a**)

13. Identify differences in specific protocols, standing orders and advanced directives between various clinical sites. (**NOCP 1.3.a**)
14. Describe the process to be followed for situations not covered by protocols, standing orders and advanced directives as per the orders of the provincial medical director. (**NOCP 1.3.a**)
15. Justify deviation from protocols, standing orders and advanced directives. (**NOCP 1.3.a**)
16. Communicate scope of practice. (**NOCP 1.3.a**)
17. List behaviors that help establish trust. (**NOCP 2.3.c**)
18. List behaviors that help establish rapport. (**NOCP 2.3.c**)
19. Describe feedback that indicates that trust and rapport has been established. (**NOCP 2.3.c**)
20. Receive feedback that indicates that trust and rapport has been established. (**NOCP 2.3.c**)
21. Demonstrate behaviour that promotes trust and rapport. (**NOCP 2.3.c**)
22. Differentiate legal, ethical and moral responsibilities (**NOCP 1.3.b**)
23. Describe the structure of the Canadian legal system and differentiate civil and criminal law (**NOCP 1.3.b**)
24. Differentiate between licensure and certification
25. Define and discuss: (**NOCP 1.3.b**)
    a. Abandonment
    b. Advance directives
    c. Assault
    d. Battery
    e. Negligence
    f. Breach of duty
    g. Duty to act
    h. Proximate cause
    i. Confidentiality (**NOCP 1.1.e**)
    j. Consent
    k. Competence
    l. Minor
    m. Emancipated minor
    n. False imprisonment
    o. Liability
    p. Libel
    q. Slander
    r. Defamation
    s. Malfeasance
    t. Misfeasance
    u. Nonfeasance
26. Discuss the four elements necessary to prove negligence (**NOCP 1.3.b**)
27. Discuss immunity as it applies to paramedicine (**NOCP 1.3.b**)
28. Identify the legal issues involved in the decision not to transport a patient (**NOCP 1.3.b**)
29. Describe the conditions under which the use of force is acceptable (**NOCP 1.3.b**)

30. Describe the ethical and legal requirements for reporting real or suspected situations of abuse ethical and legal perspectives (**NOCP 1.7.b**)
31. Adapt care and scene management to fulfill reporting requirements (**NOCP 1.7.b**)
32. Describe how a paramedic may preserve evidence at a crime scene (**NOCP 1.7.a**)

Section 05 Ethical Issues in EMS

1. Define "ethics". (**NOCP 1.1.i**)
2. Discuss the relevance of ethical behaviour in the field of prehospital medicine. (**NOCP 1.1.i**)
3. Understand the importance of and incorporate a professional code of ethics and behaviour into all aspects of the prehospital profession. (**NOCP 1.1.i**)
4. Utilize and promote ethical behaviour with patients, family members, peers, management, medical staff and allied professionals / agencies. (**NOCP 1.1.i**)
5. Discuss strategies for professional improvement. (**NOCP 1.2.b**)
6. Understand the importance of goal setting and self-evaluation. (**NOCP 1.2.b**)
7. Discuss reasonable and prudent judgement. (**NOCP 1.6.a**)
8. Understand the importance of reasonable and prudent judgment. (**NOCP 1.6.a**)
9. Identify and discuss feedback that would indicate that trust and rapport have been established between patients, patient family members, peers, allied health care providers and management. (**NOCP 1.5.b**)
10. Discuss effective problem solving. (**NOCP 1.6.b**)
11. Apply effective problem solving. (**NOCP 1.6.b**)
12. Understand the importance of and promote the process of problem solving. (**NOCP 1.6.b**)

Section 06 Leadership and Communications

1. Identify basic communication needs. (**NOCP 2.1.f**)
2. Describe common barriers to the communication process. (**NOCP 2.1.f**)
3. List the components of effective communication. (**NOCP 2.1.b**)
4. Discuss methods of achieving effective communication. (**NOCP 2.1.f**)
5. Adapt communication techniques effectively. (**NOCP 2.1.f**)
6. Define and describe non-verbal behaviour. (**NOCP 2.3.a**)
7. Identify behaviours that diffuse hostility (**NOCP 2.3.d**)
8. Discuss behaviours that may provoke hostile behaviour in others (**NOCP 2.3.d**)
9. Evaluate reactions to positive and negative patient behaviours (**NOCP 2.3.d**)
10. Choose appropriate patient care options (**NOCP 2.3.d**)
11. Demonstrate ability to manage hostile situations (**NOCP 2.3.d**)
12. Define and describe nonverbal behaviour that may affect others positively. (**NOCP 2.3.a**)
13. Define and describe nonverbal behaviour that may affect others negatively. (**NOCP 2.3.a**)
14. Identify cultural factors that may affect nonverbal communication. (**NOCP 2.3.a**)
15. Identify growth and development factors that may affect nonverbal communication. (**NOCP 2.3.a**)

16. Identify personal factors that may affect nonverbal communication. (**NOCP 2.3.a**)
17. Acknowledge the relationship between positive nonverbal behaviour and personal feelings. (**NOCP 2.3.a**)
18. Demonstrate nonverbal behaviour that positively affects communication. (**NOCP 2.3.a**)
19. Define active listening. (**NOCP 2.3.b**)
20. Acknowledge the relationship between sincerity, genuine interest, and active listening. (**NOCP 2.3.b**)
21. Define respect. (**NOCP 2.4.a**)
22. Value respect in patient care (**NOCP 2.4.a**)
23. List examples of ways to demonstrate respect. (**NOCP 2.4.a**)
24. Demonstrate these examples in a patient care setting (**NOCP 2.4.a**)
25. Identify cultural differences that affect the demonstration of respect. (**NOCP 2.4.a**)
26. Adjust actions as appropriate, consistent with others expectations of respectful behaviour (**NOCP 2.4.a**)
27. Define “empathy”. (**NOCP 2.4.b**)
28. Define “compassion”. (**NOCP 2.4.b**)
29. Define “sympathy”. (**NOCP 2.4.b**)
30. Distinguish between empathy, sympathy, and compassion. (**NOCP 2.4.b**)
31. Describe behaviours that convey empathy and compassion. (**NOCP 2.4.b**)
32. Discuss confidence. (**NOCP 2.4.d**)
33. Identify the impact of confidence on patient care. (**NOCP 2.4.d**)
34. Identify risks associated with overconfidence. (**NOCP 2.4.d**)
35. Discuss constructive feedback. (**NOCP 1.5.b**)
36. Receive constructive feedback from peers, preceptors, and other health care practitioners. (**NOCP 1.5.b**)
37. Acknowledge feedback. (**NOCP 1.5.b**)
38. Communicate with intent to provide constructive feedback. (**NOCP 1.5.b**)
39. Integrate constructive feedback within professional practice (**NOCP 1.5.b**)
40. Define “conflict”. (**NOCP 2.4.g**)
41. Identify situations of potential conflict. (**NOCP 2.4.g**)
42. Discuss basic strategies of conflict resolution between prehospital practitioners and patients, family members, bystanders, and allied health professionals. (**NOCP 2.4.g**)
43. Understand the reasoning behind the use of basic conflict resolution skills. (**NOCP 2.4.g**)
44. Demonstrate basic conflict resolution skills. (**NOCP 2.4.g**)
45. Define “diplomacy”. (**NOCP 2.4.f**)
46. Define “tact” and “discretion”. (**NOCP 2.4.f**)
47. Evaluate the impact of diplomacy, tact and discretion. (**NOCP 2.4.f**)
48. Discuss assertive behaviour. (**NOCP 2.4.e**)
49. Describe techniques of assertive behaviour (**NOCP 2.4.e**)
50. Evaluate assertive behaviour (**NOCP 2.4.e**)
51. Discuss aggressive behaviour. (**NOCP 2.4.e**)
52. Distinguish assertive and aggressive behaviour. (**NOCP 2.4.e**)
53. Distinguish threatening and non-threatening behaviours. (**NOCP 2.4.e**)
54. Identify behaviours that diffuse hostility. (**NOCP 2.3.d**)

55. Discuss behaviours that may provoke hostile behaviours in others. (**NOCP 2.3.d**)
56. List common coping mechanisms (**NOCP 2.4.c**)
57. Describe often beneficial and potentially harmful coping mechanisms and the positive and negative effects of both. (**NOCP 2.4.c**)
58. Understand the concept of providing verbal support to those displaying coping mechanisms. (**NOCP 2.4.c**)
59. Identify nonverbal means of supporting parents displaying coping mechanisms in the face of a childhood emergency. (**NOCP 2.4.c**)
60. Identify community resources that may assist those in need of psychological support. (**NOCP 2.4.c**)
61. List various emotional reactions. (**NOCP 2.4.c**)
62. Identify emergency and non-emergency situations that may require a person to be in need of emotional support. (**NOCP 2.4.c**)
63. List factors that contribute to stress in patients, relatives, and bystanders. (**NOCP 2.1.e**)
64. Identify verbal and nonverbal indicators of stress, delayed stress reaction, and PTSD. (**NOCP 2.1.e**)
65. Discuss techniques to maximize the effectiveness of communication in emergency, non-emergency, and everyday activities. (**NOCP 2.1.e**)
66. Choose techniques to maximize the effectiveness of communication. (**NOCP 2.1.e**)
67. Adapt communication techniques during stressful situations. (**NOCP 2.1.e**)
68. Understand the importance of empathy and compassion as it pertains to patient care. (**NOCP 2.4.b**)
69. Demonstrate empathy and compassion. (**NOCP 2.4.b**)
70. Discuss appropriate task delegation. (**NOCP 1.6.c**)
71. Discuss tasks delegated to non-healthcare professionals. (**NOCP 1.6.c**)
72. Value importance of leadership. (**NOCP 1.6.c**)
73. Integrate task delegation. (**NOCP 1.6.c**)
74. Perform active listening in interactions with colleagues, patients, and others. (**NOCP 2.3.b**)
75. Communicate openly despite the impending nonverbal behaviour of others(**NOCP 2.3.b**)
76. Reflect professionalism through use of appropriate language. (**NOCP 1.1.b**)
77. Distinguish language appropriate for patients, peers and other professionals (**NOCP 1.1.b**)
78. Choose language appropriate to situation. (**NOCP 1.1.b**)
79. Communicate verbally using appropriate language. (**NOCP 1.1.b**)
80. Acknowledge the impact of interpersonal relationships between team members on patient care. **(NOCP 1.5.a)**
81. Differentiate between primary, secondary and tertiary care strategies (**NOCP 8.1.a**)
82. Explain the purpose of health promotion and prevention strategies (**NOCP 8.1.a**)
83. Analyze common health promotion and prevention strategies (**NOCP 8.1.a**)
84. Modify health promotion and prevention strategies for individuals and communities (**NOCP 8.1.a**)
85. Describe tissue and organ donation programs (**NOCP 8.1.a**)

1. Domain 1 Key Competencies
    a. Health care professionals who commit to patient and provider safety through safe, competent, high-quality daily practice:
        i. Are able to articulate their role as individuals, as professionals, and as health care system employees in providing safe patient care.
        ii. Act as role models and champion patient-safety behaviours.
        iii. Recognize personal limitations and ask for assistance when required.
        iv. Demonstrate knowledge of policies and procedures as they relate to patient and provider safety, including disclosure.
        v. Report unsafe processes within the health care system.
        vi. Participate actively in event and close call reporting, event analyses and process improvement initiatives.
        vii. Exchange feedback with colleagues on safety issues on an ongoing basis in an open manner.
        viii. Integrate safety practices into daily activities (e.g., hand hygiene).
        ix. Recognize clinical situations that may be unsafe and support the empowerment of all staff to resolve unsafe situations.
        x. Demonstrate a commitment to a just culture, promoting fair approaches to dealing with adverse events.
        xi. Advocate for improvements in system processes to support professional practice standards and the best patient care.
    b. Health care professionals who are able to describe the fundamental elements of patient safety understand:
        i. Core theories and terminology of patient safety and the epidemiology of unsafe practices.
        ii. The characteristics and capacities of organizations with respect to patient safety, namely:
            1. A commitment to patient safety as a major organizational or institutional goal demonstrated at the most senior levels.
            2. The establishment and maintenance of a just culture.
            3. The implementation of patient safety best practices.
            4. The conduct of adverse event and incident (e.g., close call) analysis.
            5. The involvement of patients and their families as key players in patient safety.
            6. The provision of an environment of support and safety for health care professionals.
        iii. The use of evaluative strategies to promote safety.
        iv. The risks posed by personal and professional limitations.
        v. Principles, practices and processes that have been demonstrated to promote patient safety.

vi. The nature of systems and latent failures in the trajectory of adverse events.
vii. The emotional impact of adverse events on patients, families and health care professionals.
viii. Methods by which health care professionals can advocate for patient and health care system safety.
ix. The elements of a just culture for patient safety, and the role of professional and organizational accountabilities.
x. The concept that health care is a complex adaptive system with much vulnerability, (e.g., space or workplace design, staffing, technology).

c. Health care professionals who maintain and enhance patient safety practices through ongoing learning:
    i. Identify opportunities for continuous learning and improvement for patient safety.
    ii. Reflect on actions and decisions continuously, with self-awareness and using self-evaluation, to improve knowledge and skills in patient safety.
    iii. Analyze a patient safety event and give examples on how future events can be avoided.
    iv. Participate in patient and health care professional safety education.
    v. Share information on adaptations to practices and procedures that increase safety for specific individuals or situations.
    vi. Contribute to the creation, dissemination, application, and translation of new health care system safety knowledge and practice.
    vii. Participate in self- and peer assessments reflecting on practice and patient outcomes.
d. Health care professionals who demonstrate a questioning attitude as a fundamental aspect of safe professional practice and patient care:
    i. Recognize that continuous improvement in patient care may require them to challenge existing methods.
    ii. Identify existing procedures or policies that may be unsafe or are inconsistent with best practices and take action to address those concerns.
    iii. Re-examine simplistic explanations for adverse events to facilitate optimal changes to care.
    iv. Demonstrate openness to change.

2. Domain 2 Key Competencies
    a. Health care professionals who participate effectively and appropriately in an interprofessional health care team to optimize patient safety are able to:
        i. Describe the competencies, roles, expertise and overlapping scopes of practice of all team members and identify gaps that need to be addressed.
        ii. Describe individual and team roles and responsibilities in the context of practice and in the health care system.

iii. Demonstrate respect for all team members, including the patient and his or her family.
iv. Work to develop a shared set of individual and team values, rights and responsibilities
v. Identify and act on safety issues, priorities and adverse events in the context of team practice.
vi. Apply technology appropriately in team safety practices.
vii. Participate in the creation of a team environment where continuous learning is the norm.
viii. Contribute to a defined process for introducing new and emerging evidence into team-based care.
ix. Provide and accept feedback to improve the performance of the team and its members.
x. Practice effective listening techniques to contribute to optimal teamwork and patient care.

b. Health care professionals who meaningfully engage patients as the central participants in their health care teams:
    i. Ensure that patients are at the centre of care.
    ii. Engage patients in decision-making and the management of their own health.
    iii. Provide appropriate, sufficient and clear information, and teaching to patients to support informed decision-making.
    iv. Advocate for individual patients and for the resources to be able to provide patient-centred, high quality care.
    v. Respond to individual patient needs and respect cultural and personal health beliefs and practices.
c. Health care professionals who appropriately share authority, leadership, and decision-making for safer care:
    i. Explain their role in patient care to team members and patients.
    ii. Collaboratively consult with, delegate tasks to, supervise and support team members.
    iii. Accept delegated tasks.
    iv. Ask for support when appropriate.
    v. Encourage team members to speak up, question, challenge, advocate and be accountable to address safety issues and risks inherent in the system.
    vi. Demonstrate leadership techniques appropriate to clinical situations.
d. Health care professionals who work effectively with health care team members to manage interprofessional conflict:
    i. Define and identify conflict in health care teams.
    ii. Work with other team members to prevent conflicts.
    iii. Employ collaborative negotiation to manage conflicts in the team.
    iv. Respect differences, misunderstandings, and limitations that may contribute to interprofessional tensions.

v. Demonstrate willingness to set team goals and priorities, measure progress, and learn from experience together as a team.
vi. Address all practice variations that can dilute the reliable delivery of evidence-informed care.

3. Domain 3 Key Competencies
    a. Health care professionals who demonstrate effective verbal and non-verbal communication abilities to prevent adverse events:
        i. Show respect and empathy in communication.
        ii. Explain investigations, treatments and protocols clearly and adequately to patients.
        iii. Convey information with clarity appropriate to each patient (e.g., by using the Calgary-Cambridge model).
        iv. Convey information in structured communications to team members to promote understanding. (e.g. ARC, CHAT, CUS, DESC script, I'M SAFE, I PASS THE BATON, STAR)
        v. Communicate in a manner that is sensitive to health literacy needs.
        vi. Employ active listening techniques to understand the needs of others.
        vii. Communicate in a manner that is respectful of cultural diversity.
        viii. Respect privacy and confidentiality.
        ix. Use a variety of communication tools and techniques to enhance and assess understanding on the part of patients and their families.
    b. Health care professionals who communicate effectively in special high-risk situations to ensure the safety of patients:
        i. Engage patients or substitute decision-makers in a discussion of risks and benefits of investigations and treatments to obtain informed consent.
        ii. Provide informed discharge so that patients know when and where to seek care.
        iii. Communicate to others the urgency of a clinical situation.
        iv. Employ communication techniques to escalate concerns across authority gradients to match the seriousness of the clinical situation.
        v. Employ appropriate communication approaches in high-risk situations, such as in clinical crises, emotional or distressing situations, and conflict.
        vi. Use appropriate communication approaches to provide safe transfers, transitions of care and consultations among providers, including between institutions, and on discharge to community care.
        vii. Demonstrate insight into their own communication styles with patients and team members in ordinary, crisis and stressful situations and adjust these styles appropriately to provide safe care.
    c. Health care professionals who use effective written communications for patient safety:
        i. Provide appropriately detailed and clear written or electronic entries to the patient health record.

ii. Provide sufficient documentation to facilitate team members' comprehension of the patient's history, physical findings, diagnosis and rationale for the diagnosis, treatment and care plan at any time.
iii. Provide patient care orders and prescriptions using safe practices to avoid misinterpretation.
iv. Write patient care orders and prescriptions to convey the appropriate degree of urgency.
v. Use appropriate, safe written communication approaches in consultation requests and responses, investigative, operative and other reports, and other correspondence.
vi. Identify and promote well-designed patient education material.
vii. Recognize the safety implications of using abbreviations.
viii. Document the rationale for significant deviations from established processes or guidelines.

d. Health care professionals who apply communication technologies appropriately and effectively to provide safe patient care:
    i. Understand the benefits, limitations and professional care responsibilities of using technologies, such as the Electronic Health Record, the Electronic Medical Record, Computerized Professional Order Entry, the telephone, the fax machine, email and other such technologies.
    ii. Employ critical thinking tools and structured approaches to communications (e.g., Situation-Background-Assessment-Recommendation [SBAR] and read-back of orders on the telephone) when using technology.

4. Domain 4 Key Competencies
    a. Health care professionals who recognize routine situations and settings in which safety problems may arise:
        i. Demonstrate situational awareness by continually observing the whole environment, thinking ahead and reviewing potential options and consequences.
        ii. Recognize safety problems in real-time and respond to correct them, preventing them from reaching the patient.
        iii. Employ, as appropriate, techniques such as diligent information-gathering, cross-checking of information using checklists, and investigating mismatches between the current situation and the expected state.
    b. Health care professionals who systematically identify, implement, and evaluate context-specific safety solutions:
        i. Critically appraise the literature to identify evidence-informed and emerging safety solutions
        ii. Learn from local successes and experiences, assessing their appropriateness to a work setting
        iii. Select the most appropriate solution for a given context, taking into account quality, resources, practicality and patient preferences.

iv. Reflect on the impact of an individual intervention, including the potentially harmful or unintended consequences of a safety intervention.
v. Evaluate the ongoing success of a safety intervention by incorporating lessons learned.
vi. Adjust policies and procedures to reflect established guidelines, if applicable.

c. Health care professionals who anticipate, identify and manage high-risk situations:
i. Recognize health care settings that may lead to high-risk situations.
ii. Respond effectively by means of efficient task and process management, crisis team functioning, and dynamic decision-making.
iii. Participate in ongoing training, such as simulations to enhance abilities to manage high-risk situations.

5. Domain 5 Key Competencies
a. Health care professionals who are able to describe the individual and environmental factors that can affect human performance understand:
i. The impact of fatigue and other human limitations on clinical performance.
ii. The role of attitude and professional culture in clinical practice.
iii. The role of wellness and its effect on knowledge and skill acquisition.
iv. How to integrate coping mechanisms to mitigate performance risks and ambient conditions in various practice environments.
v. How to evaluate the impact of organizational resource allocation, policies and procedures and culture.

b. Health care professionals who apply techniques in critical thinking to make decisions safely are able to:
i. Describe the common types of cognitive biases.
ii. Model the behavioral characteristics that demonstrate situational awareness.
iii. Demonstrate a process of sound decision-making, understanding where the process can be challenged and corrected.

c. Health care professionals who appreciate the impact of the human/technology interface on safe care are able to:
i. Define human factors and human factors engineering and understand their application in health care environments.
ii. Describe the role of usability assessment in the safe application of technology.
iii. Recognize the importance of ergonomics in safety design.
iv. Describe principles of workflow analysis to enhance care.

6. Domain 6 Key Competencies
a. Health care professionals who recognize the occurrence of an adverse event or close call are able to:
i. Define the terms harm, adverse event, close call, and the response that is appropriate to each.

ii. Distinguish between the harm resulting from an adverse event and the natural progression of the patient's underlying medical condition.

b. Health care professionals who mitigate harm and address immediate risks for patients and others affected by adverse events and close calls:
    i. Assess the immediate safety and care needs for the physical and emotional well-being of patients and their families, and provide interventions as appropriate.
    ii. Reduce or manage the risk of further harm to patients affected by adverse events and close calls.
    iii. Provide appropriate support for individual health care professionals and teams involved in adverse events and close calls.
c. Health care professionals who disclose the occurrence of an adverse event to patients and/or their families as appropriate and in keeping with relevant legislation:
    i. Understand what information should be disclosed at the initial disclosure stage, the time frame for disclosure, and the relevant documentation, reporting, and analyses.
    ii. Recognize the ethical, professional and legal obligation to disclose and report adverse events.
    iii. Differentiate between disclosure and reporting and the inherent processes associated with each concept.
    iv. Are aware of existing policies and procedures associated with disclosure and the extent to which these foster a culture of patient safety.
    v. Engage in honest communication and empathic dialogue with respect to disclosure.
    vi. Recognize that there are situations that constitute special consideration regarding disclosure, for example, patients in vulnerable situations, patients who have a substitute decision-maker, patients with special communication requirements (e.g., those who are hearing impaired), and patients whose cultural perspective on disclosure differs from the provider's.
    vii. Understand the stages of disclosure.
    viii. Determine who is responsible for the disclosure and who should be present when it is made.
    ix. Recognize the role of expressions of regret and when an apology should be considered in post analysis disclosure.
    x. Document unexpected outcomes, adverse events and the disclosure discussions.
    xi. Provide ongoing follow-up as needed.
    xii. Recognize the need for a just culture of safety in supporting disclosure and reporting.
    xiii. Appreciate the legal implications arising from disclosure.
d. Health care professionals who effectively report the occurrence of an adverse event or close call:

i. Recognize that the reporting of adverse events takes place across the continuum of care and includes primary, secondary and tertiary care centers.
ii. Anticipate the need to gain a better understanding of the adverse event, such as by considering what samples, clinical materials and equipment may be helpful in future investigations.

e. Health care professionals who participate in timely event analysis, reflective practice, and planning for the prevention of recurrence:
i. Engage in personal and professional reflection regarding the adverse event.
ii. Recognize the importance of monitoring the outcome of event analysis.
iii. Apply lessons learned from the event analysis.
iv. Advocate for system change as warranted.
v. Recognize the need for information exchange across health care organizations and as mandated by provincial/territorial legislation.

Section 08 Research

1. Define ethics and ethical behaviour (**NOCP 1.1.i**)
2. Describe the role of ethics in professional practice (**NOCP 1.1.i**)
3. Define the role of ethics in clinical and academic research (**NOCP 1.1.i**)
4. Explain the importance of research in emergency medical services (**NOCP 1.2.c**)
5. Identify sources of research, access and evaluation (**NOCP 1.2.c**)
6. Define academic and clinical research (**NOCP 1.2.c**)
7. Define evidence based practice (**NOCP 1.2.c**)
8. Describe limitations in evidence based practice (**NOCP 1.2.c**)
9. Describe Quantitative research methodology (**NOCP 1.2.c**)
10. Describe Qualitative research methodology (**NOCP 1.2.c**)
11. Recognize when each style might be applicable (**NOCP 1.2.c**)
12. Describe how to develop a research question (PICO) (**NOCP 1.2.c**)
13. Write a research question (**NOCP 1.2.c**)
14. Conduct basic literature review (**NOCP 1.2.c**)
15. Be able to analyze research evidence (how to evaluate research) (**NOCP 1.2.c**)
16. Discuss levels of evidence and its relevance (**NOCP 1.2.c**)
17. Present information to a group in a clear and organized manner **(NOCP 1.2.d)**
18. Facilitate a group discussion **(NOCP 1.2.d)**

Section 09 Introduction to Anatomy and Physiology

1. Define anatomy and physiology.
2. Differentiate between gross and microscopic anatomy.
3. List and define the six levels of structural organization of the human body in order from most simple to most complex.
4. List the six principal systems of the human body and briefly describe their functions.

5. Describe normal human temperature homeostasis (balance) including:
    a. The role of the hypothalamus
    b. Defining fever
    c. Defining metabolic rate
6. Describing the relationship of body care and periphery to heat balance and core temperatures.
7. Describe how the human body senses temperature stresses, including:
    a. The roles and relative balance of peripheral and central stressors.
    b. The suggested role of central vs. peripheral clothing.
    c. Arguments or and against giving hot drinks to a mildly hypothermic person.
8. Give examples of the following physical modes of heat loss, the approximate amount of heat loss possible through each mode, and methods to counter such heat loss:
    a. Conduction
    b. Convection
    c. Radiation
    d. Evaporation
    e. Respiration (including the relative effect of air humidification)
9. Explain the concept of the body as a heat reservoir, and relate daily food intake to the amount of heat that can be lost from the body before hypothermia sets in.
10. Describe how blood circulation is related to heat loss control, specifically:
    a. Local versus central control of blood versus size.
    b. Shifts between deep and superficial veins and the end result of artery -vein countercurrent heat exchange.
    c. Areas where the deep vein circulation is close to the surface.
    d. Consequences of vasoconstriction and vasodilatation, including cold diuresis.
11. Explain the role of sweating in temperature balance, including:
    a. The major constituents of sweat and seasonal variation.
    b. The consequences of prolonged sweating, including exhaustion and fatigue.
    c. The nature of body energy reserves including glycogen, fat, and protein.
    d. The appropriateness of giving sugar to hypothermic patients.
    e. The nature of fatigue.
12. Identify the effects of the following on normal temperature homeostasis:
    a. Tobacco
    b. Alcohol
    c. Aspirin
    d. Tylenol
    e. Ibuprofen
13. Define homeostasis and use the control of body temperature as an illustration.
14. Describe anatomical position.
15. Define and apply the following directional terms and body planes:
    a. Superior
    b. Inferior
    c. Anterior (ventral)
    d. Posterior (dorsal)

    e. Medial
    f. Lateral
    g. Intermediate
    h. Proximal
    i. Distal
    j. Superficial
    k. Deep
    l. Ipsilateral
    m. Contralateral
    n. Sagittal
    o. Midsagittal
    p. Parasagittal
    q. Frontal
    r. Transverse
    s. Oblique
16. Name the two principle body cavities.
17. Name the two subdivisions of the ventral body cavity and name the major organs found in each.
18. Describe the virtual body cavities within the thorax and abdomen- the pleural, pericardial, and peritoneal, and differentiate between parietal and visceral layers of each.
19. Define the following terms:
    a. Pneumothorax
    b. Hydrothorax
    c. Ascites
    d. Cardiac tamponade
20. Name and describe the location of four quadrants and nine regions of the abdominopelvic cavity.

Section 10 Chemistry, Matter and Life

1. Define and differentiate between
    a. Matter and energy
    b. Kinetic energy and potential energy
    c. Chemical energy, radian energy, and electrical energy.
2. Define and name the four elements that comprise approximately 96 % of the human body mass.
3. Describe the composition of an element using and defining the following terms:
    a. Atom
    b. Nucleus
    c. Proton
    d. Electron
    e. Neutron
4. Define the following:

a. Atomic number
b. Atomic weight
c. Mass number
d. Isotope
e. Radioscope
f. Half life

5. Define the following:
    a. Valence
    b. Molecule
    c. Mixture
    d. Compound
    e. Solution
    f. Colloid
    g. Solvent
    h. Solute
    i. Solution
6. Use sodium chloride to help define the following ion, electrolyte, cation, anion, and ionic bond
7. Use hydrogen to help describe a covalent bond.
8. Explain how hydrogen bonds differ from ionic and covalent bonds and name two of each.

Section 11 Cells

1. Define a cell and name the four major parts common to all cells.
2. Using a model or diagram of a cell locate and label the following:
    a. Cell membrane
    b. Cytoplasm
    c. Endoplasmic reticulum
    d. Ribosomes
    e. Golgi apparatus
    f. Mitochondria
    g. Lysosome
    h. Centromere
    i. Nucleus
    j. Nucleoli
    k. Nuclear membrane
    l. Nucleoplasm
3. Describe the structure and function of the plasma membrane to include the following:
    a. Fluid mosaic model
    b. Phospholipid bilayer
    c. Cholesterol
    d. Integral proteins
    e. Peripheral proteins

    f. Glycolipids
    g. Glycoproteins
4. List four factors that affect the movement of material across the cell membrane and describe the effect of each of the four factors.
5. Differentiate between active and passive transport, identifying examples of both passive and active transport mechanisms across the cell membrane.
6. Explain how material is moved across a semi permeable membrane by the following processes:
    a. Simple diffusion
    b. Osmosis
    c. Facilitated diffusion
    d. Filtration
7. Define the terms isotonic, hypertonic solutions, and hypotonic solutions, and explain their effect on cells.
8. Explain how material is moved across the cell membrane through:
    a. Active transport (sodium-potassium pump)
    b. Endocytosis (phagocytosis, pinocytosis receptor mediated)
    c. Exocytosis
9. Define the term membrane potential, state the resting membrane potential of cells (+ or -) and explain how membrane potential is maintained with diffusion and or the sodium-potassium pump.
10. Describe the overall function of the nucleus.
11. Describe the structure of the nucleus to include:
    a. Nuclear membrane
    b. Nucleolus
    c. Chromatin
12. Describe the structure of the following cellular structures:
    a. Ribosomes
    b. Endoplasmic reticulum
    c. Golgi apparatus
    d. Lysosomes
    e. Mitochondria
13. Describe the function of the following cellular structures:
    a. Ribosomes
    b. Endoplasmic reticulum
    c. Golgi apparatus
    d. Lysosomes
    e. Mitochondria
14. Describe the structure and function of flagella and cilia.
15. Describe the structure and function of the centromere.
16. Define cytoplasmic inclusions and list four examples
17. Define a gene.
18. Describe protein synthesis to include the following:
    a. Transcription

    b. Codon
    c. Anticodon
    d. Translation
    e. Role of ribosomes
    f. Formation of polypeptide
    g. Composition and function of mRNA
    h. Composition and function of tRNA
19. Define the following terms:
    a. Mitosis
    b. Meiosis
    c. Cytokenesis
20. Name the two types of cells that result from meiosis.
21. State two major differences between meiosis and mitosis.
22. Define diploid and haploid cells.
23. State the number of chromosomes found in human somatic cells.
24. Define autosomes and sex chromosomes.
25. Define the following abnormal cell divisions:
    a. Neoplasm (benign and malignant)
    b. Metastases
26. Define metabolism.
27. Describe the role of ATP in metabolic reactions.
28. Define the following:
    a. Oxidation reaction
    b. Reduction reaction
    c. Coupled (redox) reaction
29. State the role of coenzymes in energy production.
30. Name the two classes of dietary carbohydrates with examples of each.
31. Name the first step in glucose metabolism and state where it takes place in the cell:
    a. Oxygen requirement
    b. End products
    c. ATP yield
32. Name the end product of pyruvic acid catabolism when oxygen is lacking.
33. State the next step in pyruvic acid catabolism when oxygen is present and name three end products.
34. Outline how excess glucose is stored in the body.
35. State the end result of glycogenolysis and the hormone activating the process.
36. Define gluconeogenesis and name two nutrients that can be converted into glucose.
37. Define the following:
    a. Essential amino acid
    b. Nonessential amino acid
    c. Complete protein
    d. Incomplete protein
38. Outline two anabolic reactions involving amino acids.
39. Describe the catabolism of amino acids to include:

    a. Deamination
    b. Fate of ammonia
    c. Utilization of deaminated amino acids
40. State the usual form of dietary lipids and state the difference between saturated and unsaturated fats.
41. Describe lipid metabolism to include:
    a. Utilization of glycerol
    b. Beta oxidation
    c. Formation of ketone bodies
42. Define lipogenesis, state when it occurs, and the two dietary nutrients involved.
43. Describe the factors that contribute to cell injury.
44. Describe the relationship between the Shock state and cellular injury.

Section 12 Tissues

1. Define tissue and list the four principal types and explain their general functions.
2. Define extracellular fluid and name and define the two major types.
3. Describe how cells are held together by tight junctions, anchoring junctions, and gap junctions, and state the general function of each type.
4. Name the two layers of the basement membrane and the tissue responsible for their secretions.
5. Describe the basis of classification for covering and lining epithelium.
6. List the types of epithelium using the above classification system.
7. Describe the structure and function of the following types of epithelial tissue giving sample locations that illustrate the functions:
    a. Simple squamous
    b. Simple cuboidal
    c. Simple columnar
    d. Stratified squamous
    e. Stratified cuboidal
    f. Stratified columnar
    g. Stratified transitional
    h. Pseudostratified columnar
8. Define a gland and differentiate between exocrine and endocrine glands.
9. State a proportion of connective tissue found in the body in comparison to other tissue types.
10. Describe the differences between a -cyte and - blast cell.
11. List the types of cells found in connective tissue and briefly describe their function.
12. Describe consistency and ground substance.
13. Describe the occurrence and function of hyaluronic acid.
14. Name the three types of fibers found in connective tissues and state the general function of each.
15. List the five types of mature connective tissue and three subgroups of loose, dense, and cartilage connective tissue.

16. For each of the following types of connective tissue, state:
    a. Main fibers
    b. Nature of ground substance
    c. Predominant cell types
    d. General functions
    e. Sample locations
    f. Areolar
    g. Adipose
    h. Reticular
    i. Dense regular
    j. Dense irregular
    k. Elastic
    l. Hyaline
    m. Fibrocartilage
    n. Elastic cartilage
17. For osseous tissue state:
    a. Main fibers
    b. Nature of ground substance
    c. Predominant cell types
    d. General functions
    e. Sample locations
18. For vascular tissue state:
    a. Presence of fibers
    b. Name and consistency of matrix
    c. Name three main types of cells
19. Define an epithelial membrane.
20. Define mucous membranes and state where they are found.
21. Define lamina propria and describe its function.
22. Define and describe the structure of a serous membrane.
23. Name the serous membranes of the following:
    a. Thoracic cavity
    b. Heart
    c. Abdominal cavity
24. Define synovial membrane and synovial fluid and state where they are found.
25. Name three types of muscle tissue.
26. Name the two types of cells found in nervous tissue.
27. Explain how hydrogen bonds differ from ionic and covalent bonds, and name two biological molecules where this type of bonding affects the shape.
28. Define metabolism, catabolism, and anabolism.
29. Compare decomposition, synthesis, exchange, reversible and oxidation reduction reactions.
30. Explain the concept of energy balance within the body.
31. Differentiate between inorganic and organic compounds.
32. Define acid, base, and salt.

33. Describe the pH scale and state the value(s) for:
    a. Acidic
    b. Basic
    c. Neutral
34. Describe the function of as buffer system.
35. Define polymer, monomer, dehydration synthesis, and hydrolysis.
36. State the following general information about carbohydrates:
    a. Common names of types
    b. Principal function
    c. Three major groups based on size
37. For monosaccharides, state:
    a. General structure
    b. Generic name for five and six carbon sugars
    c. Five monosaccharides found in the body
38. For disaccharides, state:
    a. General structure
    b. Two important dietary disaccharides
39. For polysaccharides, state:
    a. General structure
    b. Principal polysaccharide in the body its composition, and where it is found.
40. Describe the solubility of lipids in water and list the three major groups of lipids found in the human body.
41. Describe the structure of triglycerides and describe their main function in the body.
42. Compare the following:
    a. Saturated fats
    b. Unsaturated fats
    c. Monounsaturated fats
    d. Polyunsaturated fats
43. For phospholipids, state:
    a. The chemical structure
    b. The hydrophilic and hydrophobic ends
    c. How they are organized in a double layer
44. For steroids, state:
    a. General structure
    b. Solubility in water and fat
    c. One common example found in the body
45. List six functions of proteins in the human body and give an example of each.
46. For proteins:
    a. Name the building blocks
    b. Name the two functional groups of all amino acids
    c. Explain how peptide bonds are formed
    d. Name three levels of structural organization with a brief description of each
47. Define denaturation
48. Define an enzyme, describe its structure, and state its usual written ending.

49. Describe the structure of nucleotides and give examples of their functions.
50. Describe the structure of DNA and name the complementary bases.
51. Compare RNA to DNA; identify the functions of each.
52. Describe the function of adenosine triphosphate as the energy currency of cells

Advanced Care Paramedic
Module 2

Patient Assessment

Module 02 Patient Assessment

Advanced Care Paramedics are presented with many situations and have to use their clinical assessment and critical thinking skills in a variety of situations and patient presentations. In this module the student will learn the core components to assess patients based age and situation. The student will begin to explore critical thinking concepts and adapt their assessment based on the patient's presentation as well as understand the body's response and the homeostatic mechanisms. The paramedic student will also acquire the ability to determine the acuity of patients under the CTAS guidelines and documenting all of the findings.

Section	Topic	
1	Patient Assessment	
2	Geriatric Assessment	
3	Pediatric Assessment	
4	Bariatric Assessment	

Time Requirements:

Didactic:	Class		
		In Class	24
		Self-Directed Learning	22
		Total	46
Lab:	Practice		12
		In-class Total	58

Reference Materials: Paramedic Textbook
The Canadian Triage and Acuity Scale Participants Manual
Geriatric Education for Emergency Medical Services
Pediatric Education for Prehospital Professionals

1. Assess scene for safety (**NOCP 3.3.a**)
2. Define scene safety. (**NOCP 3.3.a**)
3. Describe factors contributing to scene safety. (**NOCP 3.3.a**)
4. Apply techniques for assessing scene safety. (**NOCP 3.3.a**)
5. Integrate techniques for the assessment of scene safety. (**NOCP 3.3.a**)
6. Address potential occupational hazards (**NOCP 3.3.b**)
7. List potential occupational hazards at the scene. (**NOCP 3.3.b**)
8. Describe ways to manage occupational hazards. (**NOCP 3.3.b**)
9. Adapt techniques to manage occupational hazards. (**NOCP 3.3.b**)
10. Identify appropriate dress for situation and environment. (**NOCP 1.1.c**)
11. Identify characteristics of personal hygiene. (**NOCP 1.1.c**)
12. Acknowledge appearance and personal hygiene. (**NOCP 1.1.c**)
13. Integrate knowledge of situation and environment to dress appropriately. (**NOCP 1.1.c**)
14. Demonstrate personal hygiene. (**NOCP 1.1.c**)
15. Discuss “dignity”. (**NOCP 1.1.a**)
16. Identify cultural characteristics that impact patient dignity. (**NOCP 1.1.a**)
17. Acknowledge cultural differences. (**NOCP 1.1.a**)
18. Recognize and understand the importance of personal privacy. (**NOCP 1.1.a**)
19. Demonstrate empathy. (**NOCP 2.4.b**)
20. Integrate care appropriate to situation. (**NOCP 1.1.a**)
21. Adapt care appropriate to the needs of the population. (**NOCP 1.1.a**)
22. Distinguish language appropriate for patients, peers, and other professionals (**NOCP 2.1.e, f, g**)
23. Chose language appropriate to a situation (**NOCP 2.1.e, f, g**)
24. Communicate verbally using appropriate language (**NOCP 2.1.e, f, g**)
25. Discuss appropriate personal interaction. (**NOCP 1.1.d**)
26. Discuss inappropriate personal interaction. (**NOCP 1.1.d**)
27. Understand the importance of appropriate professional relationships with patients. (**NOCP 1.1.d**)
28. Define and describe the techniques of inspection, palpation, percussion, auscultation (**NOCP 4.3.a**)
29. Evaluate the importance of a primary survey (**NOCP 4.3.a**)
30. Explain primary assessment. (**NOCP 4.3.a**)
31. Distinguish between trauma and medical assessment. (**NOCP 4.3.a**)
32. Describe the evaluation of mental status (**NOCP 4.4.i**)
33. Perform assessment of level of mentation. (**NOCP 4.4.i**)
34. Adapt technique of assessing level of mentation to patient age. **(NOCP 4.4.i)**
35. Describe and evaluate airway patency (**NOCP 4.3.a**)
36. Describe and evaluate circulatory status (**NOCP 4.3.c**)
37. Evaluate life threatening findings from primary survey. (**NOCP 4.3.a**)
38. Apply appropriate techniques for primary assessment. (**NOCP 4.3.a**)
39. Apply primary assessment to different age groups. (**NOCP 4.3.a**)

40. Perform primary assessment. (**NOCP 4.3.a**)
41. Adapt assessment techniques to primary assessment findings. (**NOCP 4.3.a**)
42. Analyze initial assessments to determine patients' level of distress and severity of illness / injury. (**NOCP 4.3.a**)
43. Infer a provisional diagnosis. (**NOCP 4.3.a**)
44. Communicate options to patient. (**NOCP 4.3.a**)
45. List the four parameters used to assess skin condition (**NOCP 4.4.g**)
46. Identify the factors that affect skin temperature, colour, moisture, and turgor (**NOCP 4.4.g**)
47. Distinguish between normal and abnormal findings when assessing skin color, moisture and turgor. (**NOCP 4.4.g**)
48. Describe how to assess skin color changes in different races. (**NOCP 4.4.g**)
49. Distinguish between normal and abnormal findings when assessing skin temperature, as well as skin condition. (**NOCP 4.4.g**)
50. Perform assessment of skin condition utilizing four parameters (**NOCP 4.4.g**)
51. Adapt technique of skin assessment condition to patient age and race. (**NOCP 4.4.g**)
52. Explain the physiology of respiration. (**NOCP 4.4.b**)
53. Modify respiratory assessment to patient age. (**NOCP 4.4.b**)
54. Evaluate respiratory rate, effort, excursion, and symmetry. (**NOCP 4.4.b**)
55. Distinguish between adequate and inadequate respiratory effort. (**NOCP 4.4.b**)
56. Explain factors that influence the respiratory rate. (**NOCP 4.4.b**)
57. Perform respiratory assessment. (**NOCP 4.4.b**)
58. Adapt techniques of obtaining respirations to patient situation. (**NOCP 4.4.b**)
59. Define pulse (**NOCP 4.4.a**)
60. Identify sites where a pulse may be found. (**NOCP 4.4.a**)
61. Modify pulse check to age of patient. (**NOCP 4.4.a**)
62. Evaluate arterial pulse, rate, rhythm, and quality. (**NOCP 4.4.a**)
63. Distinguish between normal and abnormal findings. (**NOCP 4.4.a**)
64. Identify factors that influence pulse rate. (**NOCP 4.4.a**)
65. Perform pulse assessment and adapt techniques to patient situation (**NOCP 4.4.a**)
66. Explain the physiology of blood pressure and pulse points (**NOCP 4.4.d, NOCP 4.4.e)**)
67. Analyze the strengths and limitations of an auscultated, as well as palpated blood pressure and distinguish between the two (**NOCP 4.4.d, NOCP 4.4.e**)
68. Explain average blood pressure expectations by age and factors that influence a patient's ascultated and/or palpated blood pressure (**NOCP 4.4.d, NOCP 4.4.e**)
69. Perform/demonstrate and adapt techniques for blood pressures obtained by auscultation and palpation (**NOCP 4.4.d, NOCP 4.4.e**)
70. Distinguish the differences in the result from an auscultated or palpated blood pressure (**NOCP 4.4.d**)

71. Integrate reasonable and prudent judgment. (**NOCP 1.6.a**)
72. Integrate problem solving. (**NOCP 1.6.b**)
73. Conduct a secondary assessment and interpret findings (**NOCP 4.3.b**)
74. Explain secondary assessment. (**NOCP 4.3.b**)
75. Distinguish between trauma and medical secondary assessment. (**NOCP 4.3.b**)
76. Evaluate life threatening findings from secondary survey. (**NOCP 4.3.b**)
77. Apply appropriate techniques for secondary assessment. (**NOCP 4.3.b**)
78. Apply secondary assessment to different age groups. (**NOCP 4.3.b**)
79. Describe the examination of the following body regions, differentiate between normal and abnormal findings, and define the significance of abnormal findings:
    a. skin, hair, and nails
    b. head, scalp, and skull
    c. eyes, ears, nose, mouth, and pharynx (**NOCP 4.3.k**)
    d. neck (**NOCP 4.3.k**)
    e. thorax (anterior and posterior) (**NOCP 4.3.c, e**)
    f. arterial pulse including rate, rhythm, and amplitude (**NOCP 4.4.a**)
    g. jugular venous pressure and pulsations (**NOCP 4.3.c**)
    h. heart and blood vessels (**NOCP 4.3.c**)
    i. abdomen (**NOCP 4.3.g**)
    j. male and female genitalia (**NOCP 4.3.h**)
    k. anus and rectum (**NOCP 4.3.h**)
    l. peripheral vascular system (**NOCP 4.3.i**)
    m. musculoskeletal system (**NOCP 4.3.j**)
    n. nervous system (**NOCP 4.3.d**)
    o. cranial nerves (**NOCP 4.3.d**)
80. Perform secondary assessment. (**NOCP 4.3.b**)
81. Adapt assessment techniques to secondary assessment findings. (**NOCP 4.3.b**)
82. Infer a provisional diagnosis. (**NOCP 4.3.b**)
83. Describe the Canadian Triage and Acuity Scale (CTAS) and explain its use in communication patient condition to other healthcare professionals (**NOCP 4.1.a**)
84. Assign a CTAS score to the patient based on presentation (**NOCP 4.1.a**)
85. Explain how trauma (indices) scores relate to triage, transport, and destination decisions as applicable.
86. Discuss indications of change in patient status that may require additional resources, altering treatment or transportation decisions. (**NOCP 4.1.a**)
87. Discuss how to assess pupils and interpret your findings. (**NOCP 4.4.h**)
88. Discuss how to assess level of mentation and interpret your findings. (**NOCP 4.4.i**)
89. List the components of a patient history. (**NOCP 2.1.c**)
90. Integrate obtaining information about allergies into history gathering. (**NOCP 4.2.a**)
91. List common examples of allergens. (**NOCP 4.2.a**)
92. Describe how an allergen can affect individuals. (**NOCP 4.2.a**)
93. Evaluate how information about an allergy will affect patient care. (**NOCP 4.2.a**)
94. Discuss methods of ascertaining drug/drug and drug/disease interactions (**NOCP 4.2.b**)
95. Apply methods of discovering a patient's list of medications. (**NOCP 4.2.b**)

96. Evaluate relationship of medication to patient history. (**NOCP 4.2.b**)
97. Assess compliance with medication list and integrate the skill of obtaining a list of medications into history gathering procedures. (**NOCP 4.2.b, d**)
98. Obtain a chief complaint and incident history from patient, family, bystanders or the scene. (**NOCP 4.2.c**)
99. Describe methods of discovering an incident history (**NOCP 4.2.c**)
100. Describe common components of an incident history. (**NOCP 4.2.c**)
101. Integrate the skill of obtaining incident history into overall patient assessment. (**NOCP 4.2.c**)
102. Adapt interview techniques to the incident history findings. (**NOCP 4.2.c**)
103. Integrate incident history information into patient care. (**NOCP 4.2.c**)
104. Obtain information regarding a patient's past medical history. (**NOCP 4.2.d**)
105. List methods of discovering a patient's past medical history. (**NOCP 4.2.d**)
106. Describe common components of a complete medical history. (**NOCP 4.2.d**)
107. Integrate the skill of obtaining a list of medical history into overall patient assessment. (**NOCP 4.2.d**)
108. Adapt interview techniques to the medical history findings. (**NOCP 4.2.d**)
109. Integrate medical history information into patient care procedures. (**NOCP 4.2.d**)
110. Obtain information about patient's last oral intake. (**NOCP 4.2.e**)
111. List situations when information about a patient's last oral intake may be required. (**NOCP 4.2.e**)
112. List methods of discovering information regarding last oral intake. (**NOCP 4.2.e**)
113. Integrate the skill of obtaining information regarding last oral intake into overall patient assessment. (**NOCP 4.2.e**)
114. Obtain information regarding incident through accurate and complete scene assessment. (**NOCP 4.2.f**)
115. Describe methods of discovering incident information. (**NOCP 4.2.f**)
116. Integrate the skill of obtaining incident information into overall patient assessment. (**NOCP 4.2.f**)
117. Adapt scene management from information gained during continuous scene assessment. (**NOCP 4.2.f**)
118. Integrate incident information into patient care procedures. **(NOCP 4.2.f)**
119. Organize a patient history and other pertinent information for the purpose of oral communication. (**NOCP 2.1.b, 2.1.c**)
120. Describe the components of a verbal report. (**NOCP 2.1.b**)
121. Perform an organized, accurate, and relevant verbal report. (**NOCP 2.1.b**)
122. Acknowledge the importance of appropriate documentation. (**NOCP 1.3.c**)
123. Organize patient information for the purposes of documentation by written report. (**NOCP 1.3.c, 2.2.a**)
124. Apply and perform principles of appropriate documentation. (**NOCP 1.3.c**)
125. Perform and communicate accurate, organized, and relevant documentation. (**NOCP 1.3.c, 2.2.a**)
126. Identify various telecommunication devices. (**NOCP 2.1.a**)
127. Describe the operational features of various telecommunication devices. (**NOCP 2.1.a**)

128. Operate various telecommunication devices (**NOCP 2.1.a**)
129. Identify relevant legislation and regulations. (**NOCP 2.1a**)
130. List the components of effective telecommunication. (**NOCP 2.1.a**)
131. Describe the components of a telecommunications report. (**NOCP 2.1.a**)
132. Organize information for an effective telecommunications report. (**NOCP 2.1.a**)
133. Perform an organized, accurate, and relevant telecommunications report. (**NOCP 2.1.a**)
134. Identify information that should and should not be communicated to the patient. (**NOCP 2.1.d**)
135. Evaluate patient comprehension. (**NOCP 2.1.d**)
136. Communicate to patient their situation and how they will be cared for. (**NOCP 2.1.d**)
137. Adapt communication based on patient apparent comprehension. (**NOCP 2.1.d**)
138. Distinguish threatening and non-threatening behaviours. (**NOCP 2.3.d**)
139. Identify behaviours that diffuse hostility. (**NOCP 2.3.d**)
140. Discuss behaviours that may provoke hostile behaviours in others. (**NOCP 2.3.d**)
141. Evaluate reactions to positive and negative patient behaviours. (**NOCP 2.3.d**)
142. Choose appropriate patient care options. (**NOCP 2.3.d**)
143. Demonstrate ability to manage hostile situations. (**NOCP 2.3.d**)
144. Define respect. (**NOCP 2.4.a**)
145. List examples of ways to demonstrate respect. (**NOCP 2.4.a**)
146. Identify cultural differences that affect the demonstration of respect. (**NOCP 2.4.a**
147. Understand the importance of respect as it pertains to patient care. (**NOCP 2.4.a**)
148. Demonstrate behaviour that is respectful to patients. (**NOCP 2.4.a**)
149. Adjust actions as appropriate consistent with others expectations of respectful behaviour. (**NOCP 2.4.a**)
150. Demonstrate appropriate behaviour relative to others utilizing coping mechanisms. (**NOCP 2.4.c**)
151. Choose behaviours that display confidence. (**NOCP 2.4.d**)
152. Adjust behaviour to exhibit an appropriate level of confidence. (**NOCP 2.4.d**)
153. Understand the importance of the provision of emotional support as it pertains to patient care. (**NOCP 2.4.c**)
154. Demonstrate behaviours that provide support. (**NOCP 2.4.c**)
155. Understand the importance of diplomacy, tact and discretion as they pertain to patient care. (**NOCP 2.4.f**)
156. Adapt behaviour to show diplomacy, tact, and discretion. (**NOCP 2.4.f**)
157. Define safe biomechanics. (**NOCP 3.2.a**)
158. Describe potential injuries common to EMS practitioners. (**NOCP 3.2.a**)
159. Describe strategies to reduce risk of injury. (**NOCP 3.2.a**)
160. Choose strategies to reduce the risk of injury. (**NOCP 3.2.a**)
161. Adapt proper lifting techniques. (**NOCP 3.2.a**)
162. Transfer patient from various positions using applicable equipment and or techniques including emergency evacuation techniques and securing the patient safely to applicable equipment. (**NOCP 3.2.b**)
163. List equipment for patient transfer. (**NOCP 3.2.b**)
164. Describe indications for equipment use. (**NOCP 3.2.b**)

165. Identify specifications of the equipment to be used. (**NOCP 3.2.b**)
166. Explain techniques of transfer using specified equipment. (**NOCP 3.2.b**)
167. Perform patient transfer. (**NOCP 3.2.b**)
168. Describe situations where emergency evacuation may be required. (**NOCP 3.2.c**)
169. Describe emergency lifting and moving techniques. (**NOCP 3.2.c**)
170. Distinguish alternative techniques and conditions for use. (**NOCP 3.2.c**)
171. Demonstrate emergency lifting and moving techniques. (**NOCP 3.2.c**)
172. Identify safe and secure methods for securing patients. (**NOCP 3.2.d**)
173. Integrate safe and secure procedures for patient movement. (**NOCP 3.2.d**)
174. Perform safe lifting techniques. (**NOCP 3.2.d**)
175. Integrate safe and proper lifting techniques. (**NOCP 3.2.b, c, d**)
176. Describe basic patient extrication principles. (**NOCP 3.3.c**)
177. Apply patient extrication principles. (**NOCP 3.3.c**)
178. Integrate basic extrication principles. (**NOCP 3.3.c**)
179. Collaborate with law enforcement agencies in the management of crime scenes. (**NOCP 1.7.a**)
180. Discuss criminal law as it applies to paramedic practice. (**NOCP 1.7.a**)
181. Discuss common characteristics of real or potential crime scenes. (**NOCP 1.7.a**)
182. Discuss the role of the paramedic in the management of real or potential crime scenes. (**NOCP 1.7.a**)
183. Manage patients in real or potential crime scenes. (**NOCP 1.7.a**)
184. Adapt scene management to the specific needs of a crime scene. (**NOCP 1.7.a**)
185. Discuss the potential role of a paramedic in a specialized law enforcement team. (**NOCP 1.7.a**)
186. Describe the benefits of accurate note taking in real or potential crime scenes. (**NOCP 1.7.a**)
187. Maintain notes appropriate to real or potential crime scenes. (**NOCP 1.7.a**)
188. Discuss the requirements of legal testimony. (**NOCP 1.7.a**)
189. Comply with ethical and legal reporting requirements for situations of abuse. (**NOCP 1.7.b**)
190. Describe the ethical and legal requirements for reporting real or suspected situations of abuse from ethical and legal perspectives. (**NOCP 1.7.b**)
191. Comply with reporting requirements. (**NOCP 1.7.b**)
192. Adapt care and scene management to fulfill reporting requirements. (**NOCP 1.7.b**)
193. Explain rationale for measuring blood pressure with non-invasive monitor **(NOCP 4.4.f)**
194. Describe techniques to obtain blood pressure with non-invasive monitor **(NOCP 4.4.f)**
195. Explain calculation and significance of Mean Arterial Pressure (MAP) and pulse pressure **(NOCP 4.4.f)**
196. Distinguish normal and abnormal findings of blood pressure determined with non-invasive monitor **(NOCP 4.4.f)**
197. Perform & troubleshoot blood pressure measurement using non-invasive monitor **(NOCP 4.4.f)**

1. Define “geriatric” patient. (**NOCP 6.2.c**)
2. Describe the aging process and its effect on the body. (**NOCP 6.2.c**)
    a. Skin and body surface
    b. Head
    c. Airway
    d. Chest and lungs
    e. Heart and circulation
    f. Abdomen
    g. Extremities
    h. Nervous system
3. Describe the normal assessment findings in a geriatric patient. (**NOCP 6.2.c**)
4. Modify typical assessment approach as necessary for a geriatric patient. (**NOCP 6.2.c**)
5. Perform appropriate assessment techniques for the geriatric patient. (**NOCP 6.2.c**)

Section 03 Pediatric Assessment

1. Define neonate patient. (**NOCP 6.2.a**)
2. Define pediatric patient. (**NOCP 6.2.b**)
3. Identify developmental parameters for specific age groups. (**NOCP 6.2.b**)
4. Explain anatomical and physiological differences between the pediatric and adult patient. (**NOCP 6.2.b**)
    a. Skin and body surface
    b. Head
    c. Airway
    d. Chest and lungs
    e. Heart and circulation
    f. Abdomen
    g. Extremities
    h. Nervous system
5. Discuss additional assessment techniques specific to the developmental milestones for pediatric patients based on age and development (**NOCP 6.2.b**)
6. Identify and interpret the findings of the following components of a pediatric physical examination: (**NOCP 6.2.b**)
    a. Skin and body surface
    b. Head
    c. Airway
    d. Chest and lungs
    e. Heart and circulation
    f. Abdomen
    g. Extremities
    h. Nervous system
7. Modify assessment approach. (**NOCP 6.2.b**)

8. Perform appropriate assessment techniques for the pediatric patient. (**NOCP 6.2.b**)
9. Communicate information regarding care to a patient, parents, or primary care giver (**NOCP 6.2.b**)

Section 04 Bariatric Assessment

1. Define “bariatric” (**NOCP 4.3.p**)
2. Describe the variations in the approach to a bariatric assessment (**NOCP 4.3.p**)
3. Modify assessment approach (**NOCP 4.3.p**)
4. Perform appropriate assessment techniques for the bariatric patient (**NOCP 4.3.**)
5. Discuss variations in transport method for a bariatric patient (**NOCP 4.3.p)**
6. Identify possible abuse or neglect of the bariatric patient(**NOCP 6.2.f**)
7. Explain variations in approach, treatment and transport methods of a bariatric patient (**NOCP 6.2.f**)
8. Justify approach, treatment and transport decisions of a bariatric patient (**NOCP 6.2.f**)

Advanced Care Paramedic
Module 3

Pharmacology

Module 03 Pharmacology

As an introduction to pharmacology this module will provide the ACP student with the foundations of knowledge in respect to the medications used in the prehospital setting. Looking at the pharmacokinetics and pharmacodynamics of medications the ACP student will learn how the body uses the medications being administered. The pharmacology will continue to be discussed and built upon within other modules as they pertain to specific disease, injury and treatments.

Section	Topic	
1	Foundations of Pharmacology	
2	Legal Aspects and Risk Management	
3	Medical Math	
4	Drug Administration	

Time Requirements:

Didactic:	Class			
		In Class		12
		Self-Directed Learning		14
			Total	26
Lab:	Practice			12
			In-class Total	38

Reference Materials: Paramedic Textbook
Prehospital Emergency Pharmacology

1. Define the following terms: (**NOCP 5.8.a**)
    a. Pharmacology
    b. Drug
    c. Drug Therapy
    d. Dosage
    e. Bio-availability
    f. Therapeutic Action
    g. Drug Interaction
2. Discuss general medicinal uses for medications
3. Explain the difference between a drug's generic, chemical, trade and official name. (**NOCP 5.8.a**)
4. Describe common sources of drugs and provide examples of prehospital medications from each source. (**NOCP 5.8.a**)
5. Describe drug preparations common to the prehospital care field and provide examples of each and explain formulations related to administration. (**NOCP 5.8.a**)
6. Explain the mechanisms of drug entry into the body. (**NOCP 5.8.a**)
7. Discuss pharmacokinetics and its components of absorption, distribution, biotransformation and elimination. (**NOCP 5.8.a**)
8. Explain drug absorption and factors that affect this process. (**NOCP 5.8.a**)
9. Explain drug distribution and factors that affect this process. (**NOCP 5.8.a**)
10. Explain drug biotransformation and factors that affect this process. (**NOCP 5.8.a**)
11. Explain drug elimination and factors that affect this process. (**NOCP 5.8.a**)
12. Define the following terms as they relate to pharmacokinetics: (**NOCP 5.8.a**)
    a. Therapeutic Index
    b. Onset of action
    c. Duration of action
    d. Half Life
    e. Dose Response Curve
    f. Effective Dose 50
    g. Lethal Dose 50
13. Discuss pharmacodynamics (**NOCP 5.8.a**)
14. Discuss the following terms as they relate to pharmacodynamics: (**NOCP 5.8.a**)
    a. Mechanism of action
    b. Drug/receptor interactions
    c. Drug/enzyme interactions
    d. Nonspecific drug interactions
    e. Reversible binding
    f. Irreversible binding
    g. Agonist
    h. Antagonist
    i. Competitive antagonists
    j. Non-competitive antagonists

    k. Affinity
    l. Reversible binding
    m. Irreversible binding
    n. Efficacy
    o. Potency
    p. Summation
    q. Synergism
    r. Potentiation
15. Discuss the following terms as they relate to unwanted reactions to medications: (**NOCP 5.8.a**)
    a. Side effect
    b. Drug interaction
    c. Tolerance
    d. Cross tolerance
    e. Tachyphylaxis
    f. Idiosyncrasy
    g. Cumulative Effect
    h. Untoward Effect
    i. Allergic response
    j. Anaphylactic reaction
16. Identify the receptor sites that may be affected by a medication. (**NOCP 5.8.a**)
17. Identify drug classification. (**NOCP 5.8.a**)
18. Identify the components of the Compendium of Pharmaceuticals and Specialties (CPS) pertinent to prehospital practice, and explain the information found within such an appropriate medication reference. (**NOCP 5.8.a**)

Section 02 Legal Aspects and Risk Management

1. Explain the five rights of medication administration. (**NOCP 5.8.b**)
2. Explain how to apply policies of reporting medication administration errors. (**NOCP 5.8.b**)
3. Discuss the four elements of negligence as they pertain to medication administration
4. List steps a provider can take to minimize risk of a medication error (**NOCP 5.8.b**)
5. Explain the benefits of protocols provide in preventing medication errors
6. Describe the schedule medications and their potential for abuse
7. Discuss the importance of properly storing, securing and maintaining medications
8. Discuss the "Cold Chain" process for medication transport
9. Discuss the effects of living wills and advance directives on prehospital providers
10. Describe the accepted processes of documenting medication administration (**NOCP 1.3.c, 2.2.a**)
11. Discuss the importance of properly documenting and reporting medication errors. (**NOCP 2.2.a, 5.8.b**)
12. Apply policies when medication administration errors occur. (**NOCP 5.8.b**)

Section 03 Medical Math

1. Identify the basic units of measure for weight, length and volume
2. Accurately convert one unit of measure to another for the purposes of drug calculations
3. Apply the basic formulas to solve drug problems and determine doses (**NOCP 5.8.c, d, e, f, g**)
4. Apply proper calculations for correct medication requirement for the patient presentation. (**NOCP 5.8.a**)

Section 04 Drug Administration

1. Define standing orders, one-time orders and as-needed orders
2. Identify the sources of medications **(NOCP 5.8.a)**
3. Explain the mechanisms of entry, absorption, site of action, metabolism and elimination **(NOCP 5.8.a)**
4. Perform calculation to determine the amount of medication required for expected action **(NOCP 5.8.a)**
5. Explain factors that affect the absorption, distribution and elimination of medication **(NOCP 5.8.a)**
6. Discuss the indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration process for each medication in Appendix 5 **(NOCP 5.8.a)**
7. Identify drug classification, as well as the chemical, generic, trade and official names for all medications in Appendix 5 **(NOCP 5.8.a)**
8. Explain the information found within an appropriate mediation reference **(NOCP 5.8.a)**
9. Explain formulations related to administration **(NOCP 5.8.a)**
10. Define pharmacological terminology and abbreviations **(NOCP 5.8.a)**
11. Discuss the signs, symptoms and side-effects of iatrongenic overdose **(NOCP 5.8.a)**
12. Explain the five rights of medication administration (**NOCP 5.8.b**)
13. Distinguish between different routes of drug administration. (**NOCP 5.8.b**)
14. Distinguish between different drug administrations enteral routes including; oral, rectal, sublingual and buccal. As well as the routes of parenteral medications including; intravenous, intramuscular, subcutaneous, intraosseous, transdermal/topical, inhalation, endotracheal and intranasal. (**NOCP 5.8.b**)
15. Discuss how medication administration protocols are applied to specific patient presentations (**NOCP 5.8.b**)
16. Apply policies when medication administration errors occur (**NOCP 5.8.b**)
17. Explain the role of the paramedic in medication administration (**NOCP 5.8.b**)
18. Demonstrate how to provide medications using a sequential step method of administration (**NOCP 5.8.b**)
19. Demonstrate how to prepare a patient for medication administration (**NOCP 5.8.b**)
20. Demonstrate how to measure the required quantity of medication (**NOCP 5.8.b**)
21. Set up the supplies required for the specific route of medication administration. (**NOCP 5.8.b**)
22. Receive consent before administration of medications (**NOCP 5.8.b**)

23. Administer medications via a number of routes including subcutaneous **(NOCP 5.8.c)**, intramuscular **(NOCP 5.8.d)**, intravenous **(NOCP 5.8.e)**, intraosseous **(NOCP 5.8.f)**, endotracheal **(NOCP 5.8.g)**, sublingual **(NOCP 5.8.h)**, buccal **(NOCP 5.8.i)**, topical **(NOCP 5.8.j)**, oral **(NOCP 5.8.k)**, rectal **(NOCP 5.8.l)**, inhalation **(NOCP 5.8.m)**, and intranasal **(NOCP 5.8.n)** by:
    a. Evaluating medical conditions and indications for the medication route
    b. Applying proper calculations for correct medication requirements for the patient presentation and route.
    c. Distinguishing the drugs approved for the medication route.
    d. Evaluating appropriate site for injection via the route chosen, if applicable.
    e. Evaluating the benefit of medication administration via the route chosen in comparison to another route.
    f. Demonstrating how to provide medications for the medication route using a sequential step method.
    g. Demonstrating how to prepare a patient for administration of a medication for the medication route chosen.
    h. Demonstrating how to measure the required quantity of medication for the medication route chosen.
24. Identify indications, relative and absolute contraindications, side effects, dosage parameters and safe administration process for each medication according to a provincial list of medications.**(NOCP 5.8.o)**.

Advanced Care Paramedic
Module 4

Haematology, Infectious Diseases
Anaphylaxis

Module 04 Haematology, Infectious Diseases and Anaphylaxis

With this module the student will become familiar with various aspects of hematology, infectious disease and anaphylaxis. This will include an exploration of the physiology and pathology of these systems and the treatment options available for the Advanced Care Paramedic.

Section	Topic	
1	Vascular Anatomy and Blood	
2	Immune System Anatomy	
3	Lymphatic System Anatomy	
4	Fluids, Electrolytes and Acid-Base Balancing	
5	Infectious Disease	
6	Allergies and Anaphylaxis	
7	Hematology and Oncological Emergencies	
8	Vascular Access	
9	Pharmacology	

Time Requirements:

Didactic:	Class		
		In Class	18
		Self-Directed Learning	30
		Total	48
Lab:	Practice		12
		In-class Total	60

Reference Materials:
- Paramedic Textbook
- Medical Terminology Textbook
- Anatomy and Physiology
- Prehospital Emergency Pharmacology
- Geriatric Education for Emergency Medical Services
- Pediatric Education for Prehospital Professionals

1. Define “artery”. (**NOCP 4.3.c, 6.1.a**)
2. Define “vein”. (**NOCP 4.3.c, 6.1.a**)
3. Define “aorta”. (**NOCP 4.3.c, 6.1.a**)
4. Define “vena cava”. (**NOCP 4.3.c, 6.1.a**)
5. List the two exceptions to the rules of veins and arteries. (**NOCP 4.3.n**)
6. Describe the structure of blood vessels including : (**NOCP 4.3.c, 6.1.a**)
    a. Tunica intima
    b. Tunica media
    c. Tunica adventitia
7. Describe the tissues of each of following: (**NOCP 4.3.c, 6.1.a**)
    a. Tunica intima
    b. Tunica media
    c. Tunica adventitia
8. Define the term “vasa vasorum”. (**NOCP 4.3.c, 6.1.a**)
9. Describe the flow of blood as it pertains to the grand circulation (within the larger blood vessels) and as it pertains to the micro circulation. (**NOCP 4.3.c, 6.1.a**)
10. Define the role of the reservoir function of veins and how this is accomplished. (**NOCP 4.3.c, 6.1.a**)
11. Discuss the following: (**NOCP 5.5.h**)
    a. Plasma
    b. Red blood cells (erythrocytes)
    c. Hemoglobin
    d. Hematocrit
    e. White blood cells (leukocytes)
    f. Platelets, clotting, and fibrinolysis
    g. Hemostasis
12. Describe the ABO Blood groups (**NOCP 5.5.h**)
13. Describe the Rh Factor (**NOCP 5.5.h**)
14. Identify on diagram the following arteries: (**NOCP 4.3.c, 6.1.a**)
    a. Aorta
    b. Splenic
    c. Superior mesenteric
    d. Renal
    e. Common hepatic
    f. Inferior mesenteric
    g. Inferior phrenic
    h. Common iliac
    i. Internal iliac
    j. External iliac
    k. Femoral
    l. Popliteal
    m. Anterior tibia

n. Posterior tibia
o. Dorsalis pedis
p. Brachiocephalic
q. Left common carotid
r. Left subclavian
s. Axillary
t. Brachial
u. Radial
v. Ulnar
w. Internal carotid
x. External carotid
y. Vertebral

15. List and briefly describe the three general functions of blood. (**NOCP 5.5.h**)
16. Describe the anatomy of red blood cells to include: (**NOCP 5.5.h**)
    a. Size
    b. Shape
    c. presence of nucleus
    d. main inclusion
17. State the normal adult hemoglobin values for men and women. (**NOCP 5.5.h**)
18. Define hematocrit and state normal adult values for men and women. (**NOCP 5.5.h**)
19. Define erythropoiesis and state where samples may be obtained from adults for examination. (**NOCP 5.5.h**)
20. Name the main hormone that controls erythropoiesis, state where it is produced, and how it is affected by oxygen concentration.
21. Name two specific dietary requirements for erythropoiesis.
22. State the life span of red blood cells and describe the ultimate state of old red blood cells. (**NOCP 5.5.h**)
23. State the main function of erythrocytes and name the compound that accomplishes this. (**NOCP 5.5.h**)
24. Define oxyhemoglobin and deoxyhemoglobin and state how each affects the color of blood. (**NOCP 5.5.h**)
25. Define anemia.
26. List and briefly describe two causes of anemia caused by insufficient numbers of red blood cells.
27. Define polycythemia.
28. Describe the structure of leukocytes to include: (**NOCP 5.5.h**)
    a. presence of nucleus
    b. ability to move and leave blood vessels
    c. five types normally found in the blood
29. State the normal range for adult leukocyte production. (**NOCP 5.5.h**)
30. Name the two sites of leukocyte production. (**NOCP 5.5.h**)
31. State the range of life span for leukocytes. (**NOCP 5.5.h**)
32. List the two areas of body defense and state which leukocytes are responsible for each.
33. Describe leukopenia, leukocytosis, and leukemia.

34. Explain how platelets are formed and state other name for platelets. (**NOCP 5.5.h**)
35. Describe the function of platelets. (**NOCP 5.5.h**)
36. Describe thrombocytopenia and thrombocytosis. (**NOCP 5.5.h**)
37. Describe hemostasis.
38. List five components of hemostasis and state which result in clot formation and which serve in a clot breaking role.
39. Define vasoconstriction and explain how it contributes to hemostasis.
40. State the major role of platelets in hemostasis. (**NOCP 5.5.h**)
41. Explain the role of fibrinolysis in hemostasis. (**NOCP 5.5.h**)
42. State the sources of Vitamin K and describe why it is necessary for normal hemostasis.
43. State the effect of the following on hemostasis:
    a. Heparin (**NOCP 5.8.a, o**)
    b. Coumadin (**NOCP 5.8.a, o**)
    c. Aspirin (**NOCP 5.8.a, o**)
44. Define the following:
    a. Thrombosis (**NOCP 4.3.c, 6.1.a**)
    b. Embolus (**NOCP 4.3.c, 6.1.a**)
    c. Hemophilia (**NOCP 4.3.c, 6.1.a**)

Section 02 Immune System Anatomy

1. Discuss the body's defense systems to include:
    a. Physical and Mechanical barriers (**NOCP 4.3.i, 6.1.f**)
    b. Biochemical barriers (**NOCP 6.1.h**)
    c. Inflammatory response and the cellular mediators (**NOCP 6.1.h**)
2. Discuss the general characteristics of Adaptive Immunity including (**NOCP 6.1.h**)
    a. Cell-mediated Immunity
    b. Humoral Immunity
3. Name the cells that produce antibodies. (**NOCP 6.1.h**)
4. Describe the specificity of antibodies. (**NOCP 6.1.h**)
5. Describe what happens when an antigen and antibody bind. (**NOCP 6.1.h**)
6. Describe the basic structure of an antibody molecule: (**NOCP 6.1.h**)
    a. Chemical composition
    b. Variable region
    c. Heavy chains
    d. Antigen binding site
    e. Light chains
    f. Constant regions.
7. Name the five types of antibodies and state which one is: (**NOCP 6.1.h**)
    a. Produced first
    b. Long lasting
    c. Found in the blood
    d. Can cross the placenta

e. Found on mucosal surfaces
f. Least understood
g. Responsible for some allergic reaction

Section 03 Lymphatic System Anatomy

1. Lymphatic Anatomy (**NOCP 6.1.a**)
2. Identify the components of the lymphatic system including: (**NOCP 6.1.a, h**)
    a. Lymph
    b. Lymphatic venules
    c. Lymphatic veins
    d. Right lymphatic duct
    e. Thoracic duct
    f. Afferent lymphatic vessels
    g. Efferent lymphatic vessels
3. Describe the function of the lymphatic system (**NOCP 6.1.a, h**)
4. Describe the relationship between the lymphatic system and the: (**NOCP 4.3.c, 6.1.a, h**)
    a. Immune system
    b. Cardiovascular system

Section 04 Fluids, Electrolytes and Acid-Base Balancing

1. Define body fluid and identify the major fluid compartments of the body. (**NOCP 6.1.a, h**)
2. List the five functions of water in the body.
3. Describe how we maintain homeostasis in our fluid levels.
4. Define electrolytes.
5. List the main cation and anion in the plasma, interstitial fluid, and extracellular fluid.
6. Describe the bulk flow of fluids between the capillaries, interstitium, cells, and lymph vessels.
7. Describe edema and explain the factors that lead to edema. (**NOCP 6.1.a**)
8. Describe where the greatest concentration of each of the following elements is found, and the role of each: (**NOCP 5.5.h**)
    a. Sodium
    b. Chloride
    c. Potassium
    d. Calcium
    e. Phosphate
    f. Magnesium
9. What is the ideal pH range in a healthy human (**NOCP 5.5.h**)
10. Identify sources of H+ within our body. (**NOCP 4.5.l**)

11. List the three mechanisms through which we can regulate acid-base balance. Which system acts the fastest(**NOCP 4.3.e**)
12. Describe the principle behind the buffer system. (**NOCP 4.3.h, 5.5.h, 6.1.d**)
13. Describe the following buffer systems in our body: (**NOCP 4.5.l**)
    a. carbonic acid - bicarbonate buffer
    b. phosphate buffer
    c. protein buffer
14. Describe how the respiratory system can alter pH. (**NOCP 4.3.e, 6.1.c**)
15. Describe the mechanisms that stimulate the respiratory system to increase or decrease its rate and result in a change in pH. (**NOCP 4.3.e, 6.1.c**)
16. Describe how the kidneys can alter pH by excreting H+ and regulating bicarbonate concentration. (**NOCP 4.3.h, 6.1.d**)
17. How do we maintain an acceptable urine pH (**NOCP 4.3.h, 6.1.d**)
18. Describe the following physiological effects of the following imbalances in pH:
    a. respiratory acidosis (**NOCP 6.1.c**)
    b. respiratory alkalosis (**NOCP 6.1.c**)
    c. metabolic acidosis (**NOCP 4.5.l**)
    d. metabolic alkalosis (**NOCP 4.5.l**)
19. Name the main components of centrifuged anticoagulated blood and state the location and approximate percentage of volume in each. (**NOCP 5.5.h**)
20. State the normal pH range of blood and the volume of blood in the averaged sized adult male and female. (**NOCP 4.5.l, 5.5.h**)

Section 05 Infectious Disease

1. Define a microorganism. (**NOCP 6.1.h, 8.3.a**)
2. List and describe infectious agents (**NOCP 6.1.h, 8.3.a**)
    a. Bacteria
    b. Viruses
    c. Fungi
    d. Protozoans
    e. Helminths (worms)
3. List the four groups of microorganisms with a brief description and example of each. (**NOCP 6.1.h, 8.3.a**)
4. Name and describe the three shapes of bacteria. (**NOCP 3.3.f**)
5. Explain what is meant by the terms gram positive and gram negative and why a gram reaction is important.
6. Define the terms spore (endospore) and vegetative cell.
7. Describe the process of sporulation and germination.
8. Explain the significance of spores in sterilization and disinfection.
9. Name and describe the process by which bacteria reproduce.
10. Define generation time and state the range for rapidly growing bacteria.
11. Define the term colony.

12. Name and describe the four growth phases and explain how the growth phases relate to infection. (**NOCP 3.3.f**)
13. State how viruses differ from bacteria in regard to replication and nucleic acid content. (**NOCP 3.3.f**)
14. Describe the structure of a naked virus and a lipid virus and compare the general resistance to disinfectants.
15. Outline the stages of replication of a DNA virus.
16. List some effects of viruses on host cells.
17. State the effect of antibiotics on viral replication.
18. Define normal flora and list areas of the body having normal flora.
19. Explain how the composition of normal flora varies in different body sites.
20. Describe how certain factors encountered in health care facilities can alter the composition of normal flora. (**NOCP 3.3.f**)
21. Define the terms and use examples to illustrate: (**NOCP 3.3.f, 8.3.a**)
    a. Contamination
    b. Colonization
    c. infection and disease
22. Define: (**NOCP 3.3.f, 8.3.a**)
    a. Pathogen
    b. Virulence
    c. Etiology
23. Define non pathogen and low grade or opportunistic pathogen.
24. Define a bacterial toxin and state how exotoxins differ from endotoxins with respect to their release from the host and their effect on the host.
25. List the three categories of bacterial reservoirs and state which one is the principal reservoir of human infections.
26. Define a carrier and differentiate between a convalescent and chronic carrier.
27. Explain how microorganisms are transmitted by direct contact, indirect contact, and droplets using examples to illustrate each. (**NOCP 3.3.f**)
28. Define vehicle transmission and give examples. (**NOCP 3.3.f**)
29. Define vector transmission and give examples of diseases transmitted in this manner. (**NOCP 3.3.f, 8.3.a**)
30. List the four portals of entry for infectious organisms.
31. Define fever (pyrexia) and explain how body activities are related to rise and fall of body temperature.
32. Explain why lymph nodes swell in response to infection. (**NOCP 6.1.h**)
33. Name and describe the location of three lymph nodes that are easily felt. (**NOCP 6.1.h**)
34. State the four cardinal symptoms of inflammation. (**NOCP 6.1.h**)
35. Outline the sequence of events in inflammation and explain how each contributes to hosts defenses. (**NOCP 6.1.h**)
36. Define purulent exudate and leukocytosis.
37. Define nosocomial infection and state the approximate rate in hospital infections. (**NOCP 3.3.f**)

38. List three factors contributing to nosocomial infections and explain the significance of each. (**NOCP 3.3.f**)
39. List the top three types of nosocomial infections in order of occurrence. (**NOCP 3.3.f**)
40. Define a staph carrier and explain how this contributes to nosocomial infections.
41. Name two antibiotic resistant bacteria that are of particular concern in health care facilities today and explain why there is a concern. (**NOCP 3.3.f, 6.1.h**)
42. Define Epidemiology.
43. Discuss public health principles relevant to infectious/communicable diseases. (**NOCP 3.3.f, 8.1.d**)
44. Identify public health agencies involved in the prevention and management of disease outbreaks. (**NOCP 8.1.a, d**)
45. List and describe the steps of an infectious process. (**NOCP 3.3.f, 6.1.h**)
46. Discuss the risks associated with infection. (**NOCP 3.3.f**)
47. List and describe the stages of infectious diseases. (**NOCP 3.3.f**)
48. In specific diseases, identify and discuss the issues of personal isolation. (**NOCP 3.3.f**)
49. Describe and discuss the rationale for the various types of personal protection equipment. (**NOCP 3.3.f, 8.3.b**)
50. Discuss what constitutes a significant exposure to an infectious agent. (**NOCP 8.3.f**)
45. Describe the assessment of a patient suspected of, or identified as having, an infectious/communicable disease. (**NOCP 8.3.f**)
46. Discuss the proper disposal of contaminated supplies such as sharps, gauze, sponges, and tourniquets. (**NOCP 3.3.f, g, h**)
51. Discuss disinfection of patient care equipment and areas where patient care occurred. (**NOCP 3.3.f, g, h**)
52. Discuss the causative agent, body systems affected and potential secondary complications, routes of transmission, susceptibility and resistance, signs and symptoms, patient management and protective measures, and immunization for each of the following: (**NOCP 3.3.f, 8.3.a, b, c, d, e, f**)
    a. HIV
    b. Hepatitis
    c. Tuberculosis
    d. Ebola/Hemorrhagic Fever
    e. Meningococcal meningitis
    f. Pneumonia
    g. Influenza
    h. Malaria
    i. Toxic Shock Syndrome
    j. SARS
    k. West Nile virus
    l. Tetanus
    m. Rabies
    n. Hantavirus
    o. Chickenpox
    p. Mumps

q. Rubella
r. Measles
s. Pertussis
t. Mononucleosis
u. Herpes simplex 1 and 2
v. Syphilis
w. Gonorrhea
x. Chlamydia
y. Scabies
z. Lice

53. Identify common pediatric viral diseases. (**NOCP 4.3.n**)
54. Discuss the characteristics of and organisms associated with febrile and afebrile diseases including bronchiolitis, bronchitis, laryngitis, croup, epiglottitis, and the common cold. (**NOCP 4.3.e**)
55. Articulate the pathophysiological principles of an infectious process given a case study of a patient with an infectious/communicable disease.
56. Practice infection control techniques. (**NOCP 3.3.f**)
57. Describe common routes for transmission of disease and infection. (**NOCP 3.3.f**)
58. Define "infection control precautions". (**NOCP 3.3.f**)
59. Apply infection control precautions. (**NOCP 3.3.f**)
60. Describe the appropriate procedures for the disposal of sharp and contaminated supplies. (**NOCP 3.3.f**)
61. Describe personal protective equipment utilized in practice. (**NOCP 3.3.f**)
62. Integrate universal precautions and safe handling procedures. (**NOCP 3.3.f**)
63. Demonstrate proper use of personal protective equipment. (**NOCP 3.3.f**)
64. Apply assessment techniques specific to the immune system. (**NOCP 6.1.h**)
65. Evaluate findings related to the etiology, pathophysiology, and manifestations of the immune system listed in Appendix 4C (**NOCP 6.1.h**)
66. Describe and perform assessment techniques for various immune system disorders. (**NOCP 6.1.h**)
67. Adapt assessment techniques to immune system history findings. (**NOCP 6.1.h**)
68. Provide care to a patient experiencing illness or injury primarily involving the immune system. (**NOCP 6.1.h**)
69. Explain the approach to a patient presenting with illness or injury involving the immune system. (**NOCP 6.1.h**)
70. Explain how patient history relates to patient presentation. **(NOCP 6.1.h)**
71. Explain how age, gender, and health status relate to patient presentation. **(NOCP 6.1.h)**
72. Infer a differential diagnosis. **(NOCP 6.1.h)**
73. Explain potential complications of illnesses and injuries to the immune system. **(NOCP 6.1.h)**
74. Adjust care based on patient presentation. **(NOCP 6.1.h)**
75. Communicate information to patient regarding care. **(NOCP 6.1.h)**
76. Integrate the approach, assessment, treatment, and transportation of a patient. **(NOCP 6.1.h)**

77. Justify the approach, assessment, care, and transportation decisions. **(NOCP 6.1.h)**
78. List equipment and supplies required to clean and disinfect equipment, as well as work environment (**NOCP 3.3.g, NOCP 3.3.h**)
79. Describe techniques/methods to clean and disinfect equipment, as well as work environment **(NOCP 3.3.g, NOCP 3.3.h)**
80. Demonstrate correct equipment, as well as work environment cleaning and disinfecting techniques. (**NOCP 3.3.g, NOCP 3.3.h**)

Section 06 Allergies and Anaphylaxis

1. Define: (**NOCP 4.2.a**)
    a. Allergy
    b. Anaphylaxis
    c. Anaphylactoid
2. Discuss the incidence, morbidly and mortality of anaphylaxis (**NOCP 4.2.a**)
3. Discuss common antigens that can create an allergic or anaphylactic reaction (**NOCP 4.2.a**)
4. Identify the common routes an antigen can enter the body (**NOCP 4.2.a**)
5. Discuss the physiological response to an antigen in an allergic state (**NOCP 4.2.a**)
6. Discuss the physiological response to an antigen in an anaphylactic state (**NOCP 4.2.a**)
7. Discuss the physiological response to an antigen in an anaphylactoid state (**NOCP 4.2.a**)
8. Review human antibody formation. (**NOCP 4.2.a, 5.5.h**)
9. Identify and differentiate between the signs and symptoms of an allergic reaction and anaphylaxis. (**NOCP 4.2.a**)
10. Discuss and demonstrate the various treatments and pharmacological interventions used in the management of allergic reactions and anaphylaxis.

Section 07 Hematology and Oncological Emergencies

1. Describe the components of blood. (**NOCP 5.5.h**)
2. Discuss blood types. (**NOCP 5.5.h**)
3. Distinguish between various products derived from blood. (**NOCP 5.5.h**)
4. Explain the pathophysiology and evaluate findings related to the etiology, pathophysiology, and manifestations of the following types of shock:
    a. Anaphylactic
    b. Cardiogenic
    c. Hypovolemic
    d. Neurogenic
    e. Obstructive
    f. Metabolic
    g. Septic (**NOCP 4.3.n**)

5. List erythrocyte disorders.
6. List leukocyte disorders.
7. List platelet and clotting disorders.
8. Describe how acquired factor deficiencies may occur.
9. Identify the components of the physical assessment as they relate to the hematology system.
10. Discuss cancer with reference to:
    a. Classification
    b. Location
    c. Treatments
11. Explain the pathophysiology and evaluate findings related to etiology, pathophysiology and manifestations of the following hematologic disorders:
    a. Anemia
    b. Leukemia
    c. Lymphomas (Hodgkin's and Non-Hodgkin's)
    d. Polycythemia
    e. Disseminated intravascular coagulopathy
    f. Hemophilia
    g. Sickle cell disease
    h. Multiple cell myeloma
12. Given several preprogramed patients with hematological problems, provide the appropriate assessment, management, and transport.

Section 08 Vascular Access

1. IV Cannulation
    a. Perform and identify the purposes and indications for peripheral venipuncture & peripheral IV cannulation.(**NOCP 4.5.d, 5.5.d**)
    b. Describe equipment used for peripheral intravenous infusion. (**NOCP 5.5.c**)
    c. Describe common prehospital crystalloid and colloid intravenous solutions. (**NOCP 5.5.g**)
    d. Explain the reason for the administration of volume expanders. (**NOCP 5.5.g**)
    e. List the steps of peripheral cannulation. (**NOCP 5.5.d**)
    f. Discuss the potential complications of peripheral IV cannulation. (**NOCP 5.5.d**)
    g. Identify factors which may affect flow rate. (**NOCP 5.5.c**)
    h. Set up equipment for the administration of volume expanders. (**NOCP 5.5.g**)
    i. Demonstrate administration of volume expanders in a simulated setting. (**NOCP 5.5.g**)
    j. Demonstrate the ability to establish and discontinue an intravenous infusion following sequential steps. (**NOCP 5.5.c, d,**)
    k. Adjust intravenous flow devices as required to maintain flow rates. (**NOCP 5.5.c**)
2. Venipuncture

a. Discuss the indications and rationale for performing peripheral venipuncture. (**NOCP 4.5.d**)
b. Identify the equipment required for peripheral venipuncture (**NOCP 5.5.d**)
c. Perform the collection of venous blood samples. (**NOCP 4.5.e**)
d. Discuss the purpose of, and indication for the use of an IV Pumps
e. Demonstrate basic principles and techniques to maintaining an IV pump. (**NOCP 5.5.f**)
f. Discuss the possible complications, errors and failures of an IV pump. (**NOCP 5.5.f**)
g. Discuss the purpose of, and indications for pressure infusion (**NOCP 5.5.f**)
h. Explain the principles and techniques for applying added pressure to an infusion line. (**NOCP 5.5.f**)
i. Adapt intravenous therapy to changes in patient presentation. (**NOCP 5.5.d, f**)
j. Perform direct pressure infusions. (**NOCP 5.5.f**)
k. Adjust to changes in patient presentation. (**NOCP 5.5.f**)

3. IO Access
    a. Identify the purposes and indications for intraosseous needle insertion and infusion (**NOCP 5.5.e**)
    b. Discuss the complications of intraosseous needle insertion and infusion (**NOCP 5.5.e**)
    c. Identify the equipment necessary to perform intraosseous infusion in the prehospital setting. (**NOCP 5.5.e**)
    d. List the steps of intraosseous needle insertion. (**NOCP 5.5.e**)
    e. Perform intraosseous needle insertion in a simulated setting. (**NOCP 5.5.e**)
    f. Simulate adapting care to changes in patient presentation. (**NOCP 5.5.e**)
    g. List medical conditions and patient indications for intraosseous medication administration. (**NOCP 5.5.e**)
    h. Apply proper calculations for correct medication requirement for the patient presentation. (**NOCP 5.8.f**)
    i. Utilize the Braslow Tape in the management of the pediatric patient.
    j. Distinguish those approved drugs that are given via the intraosseous route. (**NOCP 5.8.f**)
    k. Evaluate appropriate site for the injection. (**NOCP 5.8.f**)
    l. Evaluate the benefit of medication administration via the intraosseous route in comparison to other routes. (**NOCP 5.8.f**)
    m. Demonstrate how to provide intraosseous medication administration using a sequential step by step method. (**NOCP 5.8.f**)
    n. Demonstrate how to prepare a patient for intraosseous medication administration. (**NOCP 5.8.f**)
    o. Demonstrate how to measure the required quantity of intraosseous medication. (**NOCP 5.8.f**)
    p. Describe and discuss fluid therapy and medications utilized in pediatric resuscitation (**NOCP 4.3.n, 5.8.a, e, f**)
    q. Describe and discuss cardiac rhythm disturbances encountered during pediatric resuscitation. (**NOCP 4.3.n**)

r. Demonstrate assessment and management skills of various pediatric emergencies including cardiopulmonary arrest, respiratory failure, and shock. (**NOCP 4.3.n, 5.1.a, b, c, d, e, f, g, h, 5.2.a, b, 5.4.a, 5.5.a**)
s. Describe the initial steps in resuscitation of the pediatric patient. NOCP 4.3.n,
t. Perform intraosseous needle insertion. (**NOCP 5.8.f**)

Section 9 Pharmacology

1. For the medications listed below (**NOCP 5.8.a, o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names
    c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
    d. Evaluate medical conditions and indications for a particular route of medication administration
    e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
    f. Explain mechanism of action
    g. Apply proper calculations for correct medication requirement for the patient presentation
    h. Distinguish approved drug routes for the medication in question
    i. Evaluate appropriate site and route of medication administration
    j. Evaluate the benefits and risks of medication administration via various possible routes
        i. ASA
        ii. Diphenhydramine
        iii. Epinephrine
        iv. Glucagon
        v. Glucose (Oral)
        vi. Nitroglycerine
        vii. Salbutamol
        viii. Tetracaine
        ix. Calcium Chloride
        x. Magnesium Sulphate
        xi. Sodium Bicarbonate
2. For the medications listed below (**NOCP 5.8.a, o, Appendix 5**):
    a. Identify the drug classification
    b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
    c. List some common examples of each classification
        i. Albumin
        ii. Potassium Chloride

iii. Antibiotics
iv. Cimetidine
v. Pentaspan
vi. Voluven

Advanced Care Paramedic
Module 5

Neurology and Endocrinology

Module 05 Neurology and Endocrinology

With this module the student will become familiar with the nervous and endocrine systems and how they work together to maintain homeostasis.

Section	Topic	
1	Neurovascular Anatomy	
2	Endocrine Anatomy	
3	Sense Organ Anatomy	
4	Neurology	
5	Endocrinology	
6	Specific Area Injury	
7	Pharmacology	

Time Requirements:

Didactic:	Class			
		In Class		42
		Self-Directed Learning		30
			Total	72
Lab:	Practice			16
			In-class Total	88

Reference Materials:
- Paramedic Textbook
- Medical Terminology Textbook
- Anatomy and Physiology
- Prehospital Emergency Pharmacology
- Geriatric Education for Emergency Medical Services
- Pediatric Education for Prehospital Professionals

1. List the three basic functions of the nervous system.
2. Describe the organization of the nervous system to include:
    a. Central nervous system
    b. Peripheral nervous system
    c. Cranial nerves
    d. Spinal nerves
    e. Afferent division
    f. Efferent division
    g. Somatic nervous system
    h. Autonomic nervous system (Sympathetic and parasympathetic)
3. Name two principle types of cells found in the nervous system and describe their functions.
4. Name the four types of neuroglia found in the central nervous system and describe their functions.
5. Name the two types of neuroglia found in the peripheral nervous system and describe their functions.
6. Describe myelination and state its function.
7. Name three functional parts of a typical neuron.
8. Describe the structure of a typical neuron to include:
    a. Cell body
    b. Nucleus
    c. Nissl bodies
    d. Processes
    e. Dendrites
    f. Axon
    g. Axon hillock
    h. Axon collateral
    i. Synaptic end bulbs
    j. Axon terminals
    k. Neurolemma
    l. Myelin sheath
    m. Neurofibril nodes (Nodes of Ranvier)
9. State the basis for structural classification of neurons.
10. Describe the following types of neurons:
    a. Afferent
    b. Efferent
    c. Association (interneurons)
11. Describe why some parts of the brain and spinal cord appear white in color while others appear grey.
12. Define the following terms:
    a. Nerve

    b. Nerve fibre
    c. Ganglia
    d. Tract
    e. Nucleus
13. Name the two properties of the neuron cell membrane that allow neurons to communicate with one another.
14. Describe the resting membrane potential of a neuron and describe how it is maintained by diffusion of sodium and potassium ions and the sodium potassium pump.
15. Define depolarization and repolarization as they apply to membrane potentials.
16. Define an action potential and nerve impulse.
17. Describe the sequence of events from polarization to repolarization starting with the generation of an action potential, including the following:
    a. Threshold point
    b. All or none principle
    c. Refractory period
    d. Absolute refractory period
    e. Relative refractory period
    f. Saltatory conduction
    g. Propagated Conduction
18. Explain how the rate of conduction along an axon is affected by axon diameter myelin sheath.
19. Define a synapse and state the name of the neuron conducting the impulse toward and away from the synapse.
20. Describe the two types of synapses and state which is most common in adult nerve tissue.
21. Describe the following as they relate to a chemical synapse:
    a. Axon terminals
    b. Synaptic vesicles
    c. Synaptic clef
    d. Post synaptic receptors
    e. Neurotransmitter synaptic delay
22. List the two effects that a neurotransmitter can have on post synaptic neurons.
23. List the four chemical classes of neurotransmitters, give an example of each, and state their locations.
24. List the three events that terminate the neurotransmitter effect.
25. Describe the structure of the meninges to include:
    a. Dura mater
    b. Arachnoid mater
    c. Pia mater
    d. Epidural space
    e. Subdural space
    f. Subarachnoid space
26. Describe the location and appearance of the spinal cord.
27. Describe the cervical and lumbar enlargements.
28. Describe the conus medullaris and filum terminale.

29. Describe the structure of the spinal cord as seen in a cross section to include the following:
    a. Arrangement of white and grey matter
    b. Grey commissure
    c. Anterior (ventral) white commissure
    d. Posterior (dorsal) grey horns
    e. Anterior (ventral) grey horns
    f. Lateral grey horns
    g. White columns (anterior, posterior, and lateral)
    h. Central canal
    i. Ascending and descending tracts
    j. Name the four principle parts of the brain:
    k. Brainstem
    l. Diencephalon
    m. Cerebrum
    n. Cerebellum
30. List the dura mater layers that separate the various parts of the brain:
    a. Falx cerebri
    b. Falx cerebelli
    c. Tentorium cerebelli
31. For the ventricles of the brain, state the following:
    a. Name the fluid that circulates within the ventricles.
    b. Name each ventricle.
    c. Location of each ventricle.
    d. Name the structures connecting each ventricle.
    e. Describe how the ventricles are connected to the subarachnoid space and spinal cord.
32. State where cerebral spinal fluid is found and describe the general functions of CSF.
33. Describe the formation, composition, circulation, and reabsorption of CSF.
34. Describe the function of the blood - brain barrier and explain how this is accomplished.
35. Describe the arterial blood supply to the brain.
36. Describe the unique features of the venous supply in the brain.
37. Name the vascular sinuses.
38. Name three parts of the brain stem and describe their functions.
39. List two important overall functions of the brainstem.
40. State the location of the diencephalon and name the two component parts.
41. State the general function of the thalamus.
42. Describe the location of the hypothalamus and its seven basic homeostatic roles.
43. Describe the cerebrum and its location.
44. Describe the following features of each cerebral hemisphere, including:
    a. Gyri
    b. Sulci
    c. Fissures
    d. Longitudinal fissure
    e. Corpus callosum

45. State the location of the lobes of the cerebrum and describe each lobe's function:
    a. Frontal
    b. Parietal
    c. Occipital
    d. Temporal
    e. Insula
46. Describe the basal ganglia.
47. Summarize the function of the cerebrum.
48. Describe the appearance and general functions of the cerebellum.

Section 02 Endocrine Anatomy

1. Describe the functions of the endocrine system
2. Discuss how the endocrine system works in conjunction with the nervous system
3. Define a hormone
4. Identify the different ways to classify a hormone including structure, origin, effects and chemical composition
5. Discuss how chemical factors, endocrine factors and neural control affect the regulation of hormonal release
6. Discuss how hormones are transported throughout the body
7. Discuss the mechanisms of action of steroid and non-steroid hormones
8. Define:
    a. Up-regulation
    b. Down-regulation
    c. Direct effects
    d. Permissive effects
    e. First messenger
    f. Signal transduction
    g. Second messenger
9. Describe endocrine reflexes
10. Describe the glands of the endocrine system and the hormones they produce to include:
    a. Hypothalamus
    b. Pituitary gland
    c. Pineal Gland
    d. Thyroid gland
    e. Parathyroid gland
    f. Pancreas
    g. Adrenal glands
    h. Gonads
11. Describe hormones associated with:
    a. Placenta
    b. Thymus
    c. Gastrointestinal mucosa

d. Heart

Section 03 Sense Organ Anatomy

1. Define general senses
2. Define specialized senses
3. Discuss pain and how the body perceives it
4. Define the terms:
    a. Somatic pain
    b. Visceral pain
    c. Referred pain
    d. Pain threshold
    e. Perceptual dominance
    f. Pain tolerance
5. Discuss temperature regulation
6. Describe the mechanisms of heat production including:
    a. Chemical reactions (metabolism)
    b. Skeletal muscle contraction
    c. Chemical thermogenesis
7. Describe the mechanisms of heat loss including:
    a. Radiation
    b. Convection
    c. Conduction
    d. Evaporation
    e. Vasodilation
    f. Decreased muscle tone
    g. Increased pulmonary ventilation
    h. Voluntary mechanisms
    i. Adaption to warmer climates
8. Identify the cranial nerve that is involved with the sense of smell.
9. Describe the structure and location of the gustatory receptors.
10. List the four primary taste sensations and the area on the tongue where they are found in the greatest concentration.
11. List the accessory structures of the eye.
12. Describe the lacrimal apparatus to include:
    a. Lacrimal glands
    b. Lacrimal secretions
    c. Lacrimal canals and puncta
    d. Nasolacrimal ducts
    e. Composition and function of tears
13. Identify the three layers that make up the wall of the eye
14. Describe the location, appearance, and function of the following parts of the eye:
    a. Sclera

b. Cornea
c. Iris
d. Retina

15. Identify the two types of photoreceptor cells and state their function.
16. Describe the structure of the lens of the eye and state its function.
17. Describe the interior of the eyeball and the location of the aqueous humor and vitreous body.
18. Define intraocular pressure.
19. Describe the process of formation of an image on the retina.
20. Identify the three major areas of the ear and state their functions.
21. Identify the parts of the external ear.
22. Describe the production and function of cerumen.
23. Describe the location, appearance and function of the following parts of the ear:
    a. Auricle
    b. External auditory meatus
    c. Tympanic membrane
    d. Malleus
    e. Incus
    f. Stapes
    g. Eustachian tube
    h. Oval window
    i. Cochlea

Section 04 Neurology

1. Discuss the metabolic and structural causes of an altered level of consciousness. (**NOCP 4.3.d**)
2. Discuss the general management of the unconscious patient.
3. Describe the types and management of scalp injuries. (**NOCP 5.5.b**)
4. Describe the types and management of skull injuries. (**NOCP 6.1.o**)
5. Describe the categories of head injuries and the forces involved. (**NOCP 6.1.b, o**)
6. Discuss the cause and effect of closed head injuries. (**NOCP 4.3.b, 6.1.b**)
7. Discuss the cause and effect of intercranial pressure. (**NOCP 4.3.b, 6.1.b**)
8. Discuss the general management of the head injured patient. (**NOCP 6.1.b, o**)
9. Apply assessment techniques specific to the neurological system. (**NOCP 4.3.d**)
10. Explain the pathophysiology, signs and symptoms, and treatment considerations for: (**NOCP 6.1.b**)
    a. Intracerebral hemorrhage
    b. Epidural hemorrhage
    c. Subdural hemorrhage
    d. Subarachnoid hemorrhage
11. Evaluate the findings related to the etiology, pathophysiology, and manifestations of: (**NOCP 4.3.b, 6.1.b**)

    a. Intracerebral hemorrhage
    b. Epidural hemorrhage
    c. Subdural hemorrhage
    d. Subarachnoid hemorrhage
12. Perform assessment techniques for neurological illnesses and injuries encountered within this section. (**NOCP 4.3.d**)
13. Discuss how to assess pupils and interpret your findings. (**NOCP 4.4.h**)
14. List three parameters used to assess pupils. (**NOCP 4.4.h**)
15. Describe how to assess sensation and motor responses and interpret your findings. (**NOCP 4.3.d**)
16. Identify cranial nerves which regulate eye movement and contraction. (**NOCP 4.4.h**)
17. Explain conditions which affect pupil size, symmetry, and reactivity. (**NOCP 4.4.h**)
18. Distinguish between normal and abnormal findings when assessing pupils for size, symmetry, and reactivity. (**NOCP 4.4.h**)
19. Perform pupil assessment using three parameters. (**NOCP 4.4.h**)
20. Adapt technique of assessing pupils to patient situation. (**NOCP 4.4.h**)
21. Explain the factors that affect motor sensation and response.
22. Apply methods of assessing sensory and motor response.
23. Perform assessment of sensation and motor response.
24. Discuss how to assess level of mentation and interpret your findings. (**NOCP 4.4.i**)
25. Explain the factors that affect patient mental status. (**NOCP 4.4.i**)
26. Apply methods of assessing level of Mentation (**NOCP 4.4.i**)
27. Apply AVPU scale to mental status assessment. (**NOCP 4.4.i**)
28. Apply GCS scale to mental status assessment. (**NOCP 4.4.i**)
29. Adapt assessment techniques to neurological history findings. (**NOCP 4.3.d**)
30. Describe respiratory patterns as they relate to evaluating level of brain dysfunction. (**NOCP 6.1.b**)
31. Explain the factors that affect respiratory patterns. (**NOCP 6.1.b**)
32. Perform assessment of respiratory pattern. (**NOCP 6.1.b**)
33. Explain the pathophysiology, signs, and symptoms, and treatment considerations for:
    a. Ischemic stroke (**NOCP 4.3.d**)
    b. Hemorrhagic stroke (**NOCP 4.3.d**)
    c. Transient Ischemic Attack (**NOCP 4.3.d**)
34. Explain and evaluate findings related to the etiology, pathophysiology, and manifestations of: (**NOCP 4.3.d**)
    a. Ischemic stroke
    b. Hemorrhagic stroke
    c. Transient Ischemic Attack (**NOCP 4.3.d**)
35. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following convulsive disorders: (**NOCP 4.3.d**)
    a. Febrile seizures (**NOCP 4.3.n**)
    b. Generalized seizures
    c. Partial (Focal) seizures (**NOCP 4.3.d**)

36. Evaluate findings related to the etiology, pathophysiology, and manifestations of the following convulsive disorders: (**NOCP 4.3.d**)
    a. Febrile seizures 4.3.n
    b. Generalized seizures
    c. Partial (Focal) seizures
37. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following chronic neurological disorders: (**NOCP 4.3.d, 6.1.b**)
    a. Cerebral Palsy
    b. Bell's Palsy
    c. Multiple Sclerosis
    d. Poliomyelitis
    e. Parkinson's Disease
    f. Amyotrophic Lateral Sclerosis
    g. Structural Tumors
    h. Vascular Tumors
38. Evaluate findings related to the etiology, pathophysiology, and manifestations of the following chronic neurological disorders: (**NOCP 4.3.d, 6.1.b**)
    a. Cerebral Palsy
    b. Bell's Palsy
    c. Multiple Sclerosis
    d. Poliomyelitis
    e. Parkinson's Disease
    f. Amyotrophic Lateral Sclerosis
    g. Structural Tumors
    h. Vascular Tumors
39. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following infectious neurological disorders: (**NOCP 6.1.b**)
    a. Encephalitis
    b. Guillain Barre Syndrome
    c. Meningitis
40. Evaluate findings related to the etiology, pathophysiology, and manifestations of the following infectious neurological disorders: (**NOCP 6.1. b**)
    a. Encephalitis
    b. Guillain Barre Syndrome
    c. Meningitis
41. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following pediatric neurological disorders: (**NOCP 6.1. b, 6.2.b**)
    a. Down's Syndrome
    b. Hydrocephalus
    c. Spina Bifida (**NOCP 4.3.d**)
42. Evaluate findings related to the etiology, pathophysiology, and manifestations of the following pediatric neurological disorders: (**NOCP 6.1.d, 6.2.d**)
    a. Down's Syndrome
    b. Hydrocephalus

    c. Spina Bifida (**NOCP 4.3.d**)
43. Apply assessment techniques for neurological illness or injury (**NOCP 4.3.d**)
44. Adapt assessment techniques based on findings (**NOCP 4.3.d**)
45. Provide care to a patient experiencing illness or injury primarily involving the neurological system. (**NOCP 6.1.b**)
46. Explain the approach to a patient presenting with illness or injury involving the neurological system. (**NOCP 6.1.b**)
47. Analyze how patient history relates to patient presentation. (**NOCP 6.1.b**)
48. Analyze how age, gender and health status relate to patient presentation. (**NOCP 6.1.b**)
49. Infer a differential diagnosis & adjust care based on patient presentation. (**NOCP 6.1.b**)
50. Explain potential complications of illnesses and injuries to the neurological system. (**NOCP 6.1.b**)
51. Communicate information to patient regarding care. (**NOCP 6.1.b**)
52. Integrate the approach, assessment, treatment and transportation of a patient. (**NOCP 6.1.b**)
53. Justify approach, assessment, care and transportation decisions. (**NOCP 6.1.b**)

Section 05 Endocrinology

1. Explain the pathophysiology and evaluate findings related to etiology, pathophysiology and manifestations of the following endocrine disorders: (**NOCP 6.1.i**)
    a. Acid-Base disturbances
    b. Addison's Disease
    c. Cushing's Disease
    d. Diabetes
    e. Electrolyte disturbances
    f. Thyroid disease
    g. Diabetes Insipidus
    h. Grave's Disease
    i. Thyroid Storm
    j. Hyperthyroid
    k. Hypothyroid
    l. Myxedema
    m. Pheochromocytoma
2. Provide care to a patient experiencing illness or injury primarily involving the endocrine system. (**NOCP 6.1.i**)
3. Explain the approach to a patient presenting with illness or injury involving the endocrine system. (**NOCP 6.1.i**)
4. Analyze how patient history relates to patient presentation. (**NOCP 6.1.i**)
5. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.i**)
6. Infer a differential diagnosis. (**NOCP 6.1.i**)
7. Explain potential complications of illnesses and injuries to the endocrine system. (**NOCP 6.1.i**)
8. Integrate care based on patient presentation. (**NOCP 6.1.i**)

9. Adjust care based on patient presentation (**NOCP 6.1.i**)
10. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.i**)
11. Justify the approach, assessment, care, and transportation decisions. (**NOCP 6.1.i**)
12. Explain the indications for glucometric testing (**NOCP 4.5.c**)
13. Explain the factors that affect accuracy of glucometric testing. (**NOCP 4.5.c**)
14. Identify normal and abnormal findings when performing glucometric testing and describe the physiologic mechanism of glucose (**NOCP 4.5.c**)
15. Describe the function of the glucometer. (**NOCP 4.5.c**)
16. Perform glucometric testing (**NOCP 4.5.c**)
17. Adapt glucometric testing techniques to patient age. (**NOCP 4.5.c**)
18. Apply assessment techniques specific to the endocrine system. (**NOCP 6.1.i**)
19. Evaluate findings related to the etiology, pathophysiology, and manifestations endocrine illnesses. (**NOCP 6.1.i**)
20. Perform assessment techniques for endocrine illnesses and injuries. (**NOCP 6.1.i**)
21. Adapt assessment techniques to endocrine history findings. (**NOCP 6.1.i**)

Section 06 Specific Area Injury

1. Explain and evaluate findings related to the etiology, pathophysiology, and manifestations of the following ear, eye, nose and throat illnesses and injuries: a) Eyes traumatic (Burns / chemical exposure, Corneal injuries, Hyphema, Penetrating injury) b) Eyes medical (Cataracts, Central Retinal Artery Occlusion, Glaucoma, Infection, Retinal detachment, c) External, Middle ear disorders (Otitis externa) d) Inner ear disorders (Otitis media, Traumatic ear injuries, Vertigo), e) Face and jaw disorders (Dental abscesses, Traumatic injury, Trismus), f) Nasal and sinus disorders (Epistaxis, Sinusitis, Traumatic injury) and g) Oral and dental disorders (Dental fractures,) Penetrating injury (**NOCP 4.3.k**)
2. Apply assessment techniques specific to the ears, eyes, nose and throat. (**NOCP 4.3.k**)
3. Perform assessment techniques for illnesses and injuries to the ears, eyes, nose and throat. (**NOCP 4.3.k**)
4. Adapt assessment techniques to ears, eyes, nose and throat history findings. (**NOCP 4.3.k**)

5. Describe common medical conditions affecting the eyes ears, nose, and throat. (**NOCP 4.3.k, 5.6.c**)
6. Describe the assessment and management approach for the medical conditions affecting the eyes ears, nose, and throat. (**NOCP 4.3.k, 5.6.c**)
7. Identify the purpose of and indications for ears, eyes, nose and throat findings. (**NOCP 5.6.c)**
8. Describe types of dressings for ears, eyes, nose and throat history findings. (**NOCP 5.6.c)**
9. Demonstrate application of dressing for ears, eyes, nose and throat findings. (**NOCP 5.6.c)**

10. Adjust to changes in patient presentation for ears, eyes, nose and throat findings. (**NOCP 5.6.c)**
11. Provide care to a patient experiencing illness or injury affecting the eyes ears, nose, and throat. (**NOCP 4.3.k, 5.6.c, 6.1.k**)
12. Explain the pathophysiology, signs, and symptoms, and treatment considerations for the following causes of headache and facial pain:
    a. Infection
    b. Intercranial hemorrhage
    c. Migraine headache
    d. Tension headache
13. Evaluate findings related to the etiology, pathophysiology, and manifestations of following cause of headache and facial pain:
    a. Infection
    b. Intercranial hemorrhage
    c. Migraine headache
    d. Tension headache
14. Explain the pathophysiology of specific ear, eye, nose and throat conditions listed in Appendix C and the approach to patients presenting with these conditions **(NOCP 6.1.j)**
15. Analyze how patient history, age, gender and health status relate to patient presentation **(NOCP 6.1.j)**
16. Infer a differential diagnosis **(NOCP 6.1.j)**
17. Explain potential complications of ears, eyes, nose and throat conditions **(NOCP 6.1.j)**
18. Adjust care based on patient presentation **(NOCP 6.1.j)**
19. Integrate the approach, assessment, treatment and transportation of a patient **(NOCP 6.1.j)**
20. Justify approach, assessment, care and transportation decisions **(NOCP 6.1.j)**

Section 07 Pharmacology

3. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names
    c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
    d. Evaluate medical conditions and indications for a particular route of medication administration
    e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
    f. Explain mechanism of action
    g. Apply proper calculations for correct medication requirement for the patient presentation
    h. Distinguish approved drug routes for the medication in question
    i. Evaluate appropriate site and route of medication administration

j. Evaluate the benefits and risks of medication administration via various possible routes
    i. Glucose
    ii. Glucagon
    iii. Dextrose 50%
    iv. Thiamine
    v. Diazepam
    vi. Lorazepam
    vii. Midazolam
    viii. Tetracaine

4. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify the drug classification
    b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
    c. List some common examples of each classification
        i. Benztropine
        ii. Ergotamine
        iii. Insulin
        iv. Levodopa
        v. Mannitol
        vi. Sinemet

Advanced Care Paramedic
Module 6

Respiratory

Module 06 Respiratory

With this module the student will become familiar with the respiratory system and will be able to assess, evaluate and treat appropriately given the patient presentation.

Section	Topic	
1	Respiratory Anatomy	
2	Airway Control	
3	Respiratory Pathophysiology	
4	Respiratory Pharmacology	

Time Requirements:

Didactic:	Class		
		In Class	36
		Self-Directed Learning	30
		Total	66
Lab:	Practice		28
		In-class Total	94

Reference Materials:
Paramedic Textbook
Medical Terminology Textbook
Anatomy and Physiology
Prehospital Emergency Pharmacology
Geriatric Education for Emergency Medical Services
Pediatric Education for Prehospital Professionals

1. Identify the following structures and discuss their function:
    a. Anterior and Posterior Nares
    b. Vestibule
    c. Turbinates
    d. Nasal septum
    e. Olfactory mucosa
    f. Eustachian tube
    g. Hard palate
    h. Soft palate
    i. Uvula
    j. Tongue
    k. Epiglottis
    l. Glottic opening
    m. True and False Vocal cords
    n. Pyriform fossa
    o. Hyoid bone
    p. Thyroid membrane
    q. Thyroid cartilage
    r. Arytenoid cartilage
    s. Cricoid cartilage
    t. Cricothyroid membrane
    u. Trachea
    v. Paranasal sinus
    w. Palantine tonsils
    x. Pharyngeal tonsils
    y. Pharynx and its three regions
    z. Larynx and the nine cartilages that it composes of
        i. Epiglottis
        ii. Arytenoid
        iii. Corniculate
        iv. Cuneiform
        v. Thyroid
        vi. Cricoid
    aa. Trachea
    bb. Mainstem Bronchi
    cc. Carina
    dd. Secondary bronchi
    ee. Tertiary bronchi
    ff. Bronchioles
    gg. Alveoli
    hh. Alveolar ducts

2. Understand the importance of the above structures in regards to ventilation and airway management.
3. Describe the major function of the respiratory system and list the three distinct processes that collectively make up the process of respiration
4. Name the major parts and organs of the respiratory system and state which are involved in gas exchange and conduction of air.
5. State how the epithelial lining differs from the primary bronchi to the terminal bronchioles.
6. Describe the structure of the respiratory membrane.
7. Describe the function of type I cells, type II cells, and alveolar macrophages.
8. Discuss the importance of surfactant
9. Given a diagram of the lungs identify the following:
    a. Lungs
    b. Costal surfaces
    c. Apex
    d. Base
    e. Root
    f. Hilum
    g. Cardiac notches
10. Given a diagram identify the lobes of both lungs.
11. Describe the structure and function of the parietal and visceral pleura.
12. State the relationship between pressure and flow of gas into and out of the lungs.
13. Describe the relationship between pressure and volume of gas (Boyle's Law).
14. Compare and contrast inspiration and expiration in terms of pressure and gas flow.
15. Contrast normal (passive) exhalation with forced exhalation.
16. State the relationship between gas flow and pressure gradient (delta P).
17. Describe the lung volumes and capacities.
18. State Dalton's Law of Partial Pressures and calculate partial pressures when given a barometric pressure and individual gas concentrations.
19. State Henry's Law and how it relates to oxygen therapy.
20. State a simple overview of the pulmonary gas exchange in external respiration.
21. Relate the direction of gas diffusion given the partial pressure of oxygen and carbon dioxide in the alveoli and the venous circulation.
22. Briefly describe gas exchange in internal respiration.
23. Compare PCO_2 and PO_2 in the pulmonary arteries and veins.
24. State how oxygen is carried by the blood.
25. Differentiate between oxyhemoglobin and deoxyhemoglobin.
26. List four factors that affect binding of oxygen to hemoglobin and how each factor affects the binding.
27. Discuss the oxyhemoglobin dissociation curve and how it relates to homeostasis
28. List the three forms in which carbon dioxide is transported in the blood.
29. State the location of the inspiratory and expiratory centers in the brain.
30. List seven factors that can influence the rate and depth of breathing.

1. Describe the different types of masks available for delivering oxygen to breathing patient.
2. Describe the different devices available to provide positive pressure ventilation to a patient
3. Discuss the available types of oxygen delivery systems available in the prehospital and in-hospital settings (**NOCP 5.2.d**)
4. Discuss the Pin Index Safety System and the American Thread Standard
5. Discuss the safety procedures for using oxygen
6. Discuss the complications of oxygen delivery
7. Explain the purposes of and indications for oropharyngeal suctioning. (**NOCP 5.1.b**)
8. Describe suctioning equipment. (**NOCP 5.1.b**)
9. Explain established standards of maintenance for suctioning equipment. (**NOCP 5.1.b**)
10. Identify pressure limitations for suctioning various age groups. (**NOCP 5.1.b**)
11. Operate appropriate suctioning devices. (**NOCP 5.1.b**)
12. Explain potential complications of suction (**NOCP 5.1.b**)
13. Perform suctioning using safe technique. (**NOCP 5.1.b**)
14. Adapt suctioning techniques to changes in patient's condition. (**NOCP 5.1.b**)
15. Perform cleaning and disinfection of suctioning equipment. (**NOCP 5.1.b**)
16. Discuss the methods of opening an airway and relieving airway obstructions. **(NOCP 5.1.a)**
17. Evaluate the types of airway maneuvers for various patient presentations (**NOCP 5.1.a**)
18. Analyze the indications, contraindications, and precautions of performing airway manoeuvres and apply problem solving techniques for various patients (**NOCP 5.1.a**)
19. Adapt manoeuvres (positioning for head, neck & jaw) to improve airway patency & perform manual airway manoeuvres based on patient and environmental situation. (**NOCP 5.1.a**)
20. Demonstrate management of potential complications of airway maneuvers. (**NOCP 5.1.a**)
21. Describe the purposes of, indications for, and equipment required for foreign body removal by forceps. (**NOCP 5.1.j**)
22. Demonstrate the procedure for foreign body removal in a simulated setting. (**NOCP 5.1.j**)
23. Adjust to changes in patient presentation in the setting of foreign body obstruction. (**NOCP 5.1.j**)
24. Identify the indications for airway foreign body removal. (**NOCP 5.1.i**)
25. Describe the methods of relieving airway obstructions. (**NOCP 5.1.i**)
26. Describe the differences in technique required for removing foreign body airway obstructions for various age groups. (**NOCP 5.1.i**)
27. Perform removal of foreign body airway obstructions under a variety of situations. (**NOCP 5.1.i**)
28. Adjust to changes in patient presentation. (**NOCP 5.1.i**)
29. Discuss potential complications of removal of foreign body airway obstructions. (**NOCP 5.1.i**)
30. Identify potential complications of removal of foreign body airway obstructions by forceps. (**NOCP 5.1.j**)

31. Explain the purpose and indications for inserting an oropharyngeal or nasopharyngeal airway. (**NOCP 5.1.d, e**)
32. Discuss oropharyngeal airway types and sizes. (**NOCP 5.1.d**)
33. Perform oropharyngeal airway sizing procedures. (**NOCP 5.1.d**)
34. Perform insertion of oropharyngeal airway. (**NOCP 5.1.d**)
35. Adjust to changes in patient presentation. (**NOCP 5.1.d**)
36. Discuss nasopharyngeal airway types and sizes.
37. Perform nasopharyngeal airway sizing procedures. (**NOCP 5.1.e**)
38. Perform insertion of nasopharyngeal airway. (**NOCP 5.1.e**)
39. Explain the purposes of and indications for inserting a nasopharyngeal airway. (**NOCP 5.1.e**)
40. Apply problem solving techniques required with various types of patients (**NOCP 5.1.e**)
41. Discuss indications for oxygen administration (**NOCP 5.2.a**)
42. Explain purpose and possible complications of oxygen administration. (**NOCP 5.2.a**)
43. Describe the safe handling of oxygen delivery systems. (**NOCP 5.2.b**)
44. Discuss oxygen administration precautions. (**NOCP 5.2.b**)
45. Identify oxygen cylinder types and sizes. (**NOCP 5.2.a**)
46. Apply the formulas that determine oxygen cylinder factors, volume (or type), and maximum filling volumes and duration. (**NOCP 5.2.a**)
47. Identify various types of oxygen delivery systems. (**NOCP 5.2.a**)
48. Explain the difference between portable and fixed oxygen delivery systems. (**NOCP 5.2.b**)
49. Describe the sequential steps for setting up oxygen delivery systems. (**NOCP 5.2.b**)
50. Operate oxygen delivery systems. (**NOCP 5.2.b**)
51. Demonstrate cleaning and disinfection of oxygen delivery systems. (**NOCP 5.2.b**)
52. Identify the purposes and indications for the use of a nasal cannula. (**NOCP 5.3.a**)
53. List the steps for administration of oxygen by nasal cannula. (**NOCP 5.3.a**)
54. Perform oxygen administration using a nasal cannula. (**NOCP 5.3.a**)
55. Adjust to changes in patient presentation. (**NOCP 5.3.a**)
56. Identify the purposes of and indications for the use of a low concentration mask. (**NOCP 5.3.b**)
57. List the steps for administration of oxygen by low concentration mask. (**NOCP 5.3.b**)
58. Perform oxygen administration using a low concentration mask. (**NOCP 5.3.b**)
59. Adjust to changes in patient presentation. (**NOCP 5.3.b**)
60. Identify the purposes of and indications for the use of a controlled concentration mask. (**NOCP 5.3.c**)
61. List the steps for administration of oxygen by controlled concentration mask. (**NOCP 5.3.c**)
62. Perform oxygen administration using a controlled concentration mask. (**NOCP 5.3.c**)
63. Adjust to changes in patient presentation. (**NOCP 5.3.c**)
64. Identify the purposes of and indications for the use of a high concentration mask. (**NOCP 5.3.d**)
65. List the steps for administration of oxygen by high concentration mask. (**NOCP 5.3.d**)
66. Perform oxygen administration using a high concentration mask. (**NOCP 5.3.d**)
67. Adjust to changes in patient presentation. (**NOCP 5.3.d**)
68. Identify the purposes of and indications for the use of a pocket mask. (**NOCP 5.3.e**)

69. List the steps for administration of oxygen by pocket mask. (**NOCP 5.3.e**)
70. Perform oxygen administration using a pocket mask. (**NOCP 5.3.e**)
71. Adjust to changes in patient presentation. (**NOCP 5.3.e**)
72. Identify the purposes of and indications for the use of a bag valve mask. (**NOCP 5.4.a**)
73. List the steps for administration of oxygen by bag valve mask. (**NOCP 5.4.a**)
74. Discuss indications for mechanical ventilation. (**NOCP 5.4.b**)
75. Perform ventilation using a bag valve mask. (**NOCP 5.4.a**)
76. Distinguish between one person and two person application of a bag valve mask. (**NOCP 5.4.a**)
77. Evaluate the effectiveness of ventilation. (**NOCP 5.4.a**)
78. Discuss rate, rhythm, volume, compliance and positive and expiratory pressure. (**NOCP 5.4.a**)
79. Adjust to changes in patient presentation (**NOCP 5.4.a**)
80. Evaluate methods of classifying and grading of patient's airway. (**NOCP 5.1.a**)
81. Describe the various types of advanced airway devices. (**NOCP 5.1.g, h**)
82. Discuss the relevant anatomy and patient position for performing advanced airway procedures.
83. For airway devices not requiring visualization of the vocal cords and not introduced endotracheally, explain each devices purpose and indications, describe the various types of each device, perform sizing procedures for each device, perform insertion of the various devices, and adjust for changes in patient presentation. **(NOCP 5.1.f)**.
84. For airway devices not requiring visualization of the vocal cords and introduced endotracheally, explain each devices purpose and indications, describe the various types of each device, perform sizing procedures for each device, perform insertion of the various devices, and adjust for changes in patient presentation. **(NOCP 5.1.g)**.
85. For airway devices requiring visualization of the vocal cords and introduced endotracheally, explain each devices purpose and indications, describe the various types of each device, perform sizing procedures for each device, perform insertion of the various devices, and adjust for changes in patient presentation. **(NOCP 5.1.h)**.
86. For percutaneous cricothyroidotomy and surgical cricothyroidotomy, identify their purposes and indications, describe equipment used for each, perform each procedure, adjust to changes in patient presentation and identify potential complications associated with each procedure. **(NOCP 5.1.k, NOCP 5.1.l)**.
87. Discuss the indications and complications of tracheal suctioning. (**NOCP 5.1.c**)
88. Describe the equipment required and the procedure for tracheal suctioning. (**NOCP 5.1.c**)
89. Perform tracheal suctioning in a simulated setting. (**NOCP 5.1.c**)
90. Identify what a pulse oximeter measures and explain the physiologic properties of oxygen. (**NOCP 4.5.a**)
91. Explain factors that affect accuracy of pulse oximetry.
92. Identify four situations where pulse oximeter use may provide a faulty reading.
93. Evaluate oximetry waveforms.
94. Infer indications for oxygen administration relative to saturated oxygen values.
95. Perform oximetry testing and adapt technique to patient age in a simulated setting.

96. Differentiate between various end tidal carbon dioxide monitoring methods. (**NOCP 4.5.b**)
97. Explain factors which may limit the reliability of end tidal carbon dioxide values. (**NOCP 4.5.b**)
98. Explain the relationship of end tidal carbon dioxide to arterial blood gas measurement of partial pressure of arterial carbon dioxide. (**NOCP 4.5.b**)
99. Differentiate between sidesstream, microstream and mainstream end-tidal carbon dioxide. (**NOCP 4.5.b**)
100. Describe capnographic waveforms. (**NOCP 4.5.b**)
101. Describe the equipment and procedure for application of CPAP
102. Perform the administration and maintenance of CPAP
103. Discuss the indications, contraindications and complications of CPAP use

Section 03 Respiratory Pathophysiology

1. Apply assessment techniques specific to the respiratory system. (**NOCP 4.3.e**)
2. Evaluate the significance of normal and adventitious breath sounds identified on auscultation. (**NOCP 4.3.e**)
3. Perform assessment techniques for respiratory illnesses and injuries. (**NOCP 4.3.e**)
4. Adapt assessment techniques to respiratory system findings. (**NOCP 4.3.e**)
5. Evaluate and explain signs / symptoms, describe appropriate treatment as applicable, and explain the pathophysiology of the following respiratory illnesses and injuries: (**NOCP 4.3.e**)
    a. Medical Illness
        i. Acute respiratory failure
        ii. Adult Respiratory Distress Syndrome
        iii. Aspiration
        iv. Chronic Obstructive Pulmonary Disease
        v. Hyperventilation syndrome
        vi. Pleural effusion
        vii. Pneumonia
        viii. Pleurisy
        ix. Bronchitis
        x. Pulmonary Edema
        xi. Pulmonary Embolism
        xii. Reactive airways disease / Asthma
    b. Pediatric Illness
        i. Acute respiratory failure
        ii. Bronchiolitis
        iii. Croup
        iv. Cystic Fibrosis
        v. Epiglottitis

vi. Sudden Infant Death Syndrome (**NOCP 4.5 e**)

c. Neck and Upper Airway Disorders
    i. Obstruction
    ii. Peritonsillar abscess
    iii. Retropharyngeal abscess
    iv. Tonsillitis
    v. Tracheostomies
    vi. Trauma injury (Blunt or penetrating)

6. Provide care to a patient experiencing illness or injury primarily involving the respiratory system. (**NOCP 6.1.c**)
7. Explain the approach to a patient presenting with illness or injury involving the respiratory system. (**NOCP 6.1.c**)
8. Analyze how patient history relates to patient presentation. (**NOCP 6.1.c**)
9. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.c**)
10. Explain a differential diagnosis. (**NOCP 6.1.c**)
11. Infer potential complications of illnesses and injuries to the respiratory system. (**NOCP 6.1.c**)
12. Integrate care based on patient presentation. (**NOCP 6.1.c**)
13. Adjust care based on patient presentation (**NOCP 6.1.c**)
14. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.c**)
15. Justify the approach, assessment, care, and transportation decisions. (**NOCP 6.1.c**)

Section 04 Respiratory Pharmacology

5. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names
    c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
    d. Evaluate medical conditions and indications for a particular route of medication administration
    e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
    f. Explain mechanism of action
    g. Apply proper calculations for correct medication requirement for the patient presentation
    h. Distinguish approved drug routes for the medication in question
    i. Evaluate appropriate site and route of medication administration
    j. Evaluate the benefits and risks of medication administration via various possible routes
        i. Diphenhydramine
        ii. Diazepam

iii. Epinephrine
iv. Furosemide
v. Ipratropium
vi. Oxygen
vii. Racemic Epinephrine
viii. Salbutamol
ix. Morphine
x. Midazolam

6. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify the drug classification
    b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
    c. List some common examples of each classification
        i. Aminophylline
        ii. Dexamethasone
        iii. Ephedrine
        iv. Hydrocortisone
        v. Methylprednisolone
        vi. Prednisone

Advanced Care Paramedic
Module 7

Cardiovascular Emergencies

Module 07 Cardiovascular Emergencies

Cardiovascular emergencies are life-threatening and can be of a time sensitive nature. The Advanced Care Paramedic must be able to recognize the signs and symptoms and diagnose quickly to avoid delay in treatment and to minimize morbidity and mortality. In this module the student will review the practitioners approach to these disorders and their treatments for ACS, arrhythmias and cardiac arrests. In addition the ACP student will review common medications for patients with pre-existing cardiac disease and the medications used for the treatment modalities currently being used nationally.

Section	Topic	
1	Cardiovascular Anatomy	
2	Cardiac Electrophysiology	
3	Cardiac Assessment and Management	
4	Cardiac Pharmacology	

Time Requirements:

Didactic:	Class		
		In Class	48
		Self-Directed Learning	36
		Total	84
Lab:	Practice		28
		In-class Total	112

Reference Materials:
- Paramedic Textbook
- Medical Terminology Textbook
- Anatomy and Physiology
- Prehospital Emergency Pharmacology
- Geriatric Education for Emergency Medical Services
- Pediatric Education for Prehospital Professionals
- Advanced Cardiac Life Support Manual
- Pediatric Advanced Life Support Manual

1. Given a diagram of the heart will identify and outline the function of the following structures:
    a. Atria
    b. Interatrial septal wall
    c. Ventricles
    d. Interventricular septal wall
    e. Atrioventricular valves
    f. Tricuspid valve
    g. Bicuspid valve
    h. Semilunar valves
    i. Aortic valve
    j. Pulmonary valve
    k. Chordae tendonae
    l. Papillary muscles
    m. Coronary sinus
    n. Pulmonary trunk
    o. Pulmonary arteries
    p. Pulmonary veins
    q. Inferior vena cava
    r. Superior vena cava
    s. Auricles
    t. Aorta
    u. Base
    v. Apex
    w. Fibrous skeleton
2. Describe the size, shape and location of the heart
3. Identify the four surfaces of the heart
    a. Anterior
    b. Posterior
    c. Inferior
    d. Lateral
4. Identify the muscle layers of the heart
    a. Epicardium
    b. Myocardium
    c. Endocardium
5. Identify and describe the function of the pericardium and its layers
    a. Parietal pericardial layer
    b. Pericardial cavity
    c. Visceral pericardial layer
6. Trace the flow of blood through the pulmonary and systemic circulation
7. Identify and describe the function of the coronary vessels
    a. Right coronary artery

    b. Left coronary artery
    c. Left anterior descending artery
    d. Circumflex artery
    e. Great cardiac vein
    f. Middle cardiac vein
    g. Small cardiac vein
8. Describe the function of intercalated discs
9. Describe the intrinsic and extrinsic stimulation of the heart
    a. Conduction system of the heart
        i. Sinoatrial node
        ii. Bachmann's bundle
        iii. Anterior, middle and posterior intermodal tract
        iv. Atrioventricular node
        v. Atrioventricular bundle
        vi. Left and right bundle branches
        vii. Purkinje fibers
    b. Action potential of a cardiac cell
    c. Nerve supply
        i. Cardiac center
        ii. Middle, superior and inferior cardiac nerves
        iii. Vagus nerve
        iv. Cardiac plexus
        v. Vasomotor Control Mechanism
        vi. Carotid and aortic baroreceptors
        vii. Carotid and aortic chemoreceptors
        viii. Medullary ischemic reflex
        ix. Cerebral cortex and hypothalamus stimulation
    d. Hormonal stimulation
10. Describe the components of a complete cardiac cycle
    a. Atrial systole
    b. Isovolumetric Ventricular Contraction
    c. Ejection
    d. Isovolumetric Ventricular Relaxation
    e. Passive Ventricular Filling
11. Define:
    a. Systole
    b. Diastole
    c. Preload
    d. Afterload
    e. End diastolic volume
    f. End systolic volume
    g. Stroke volume
    h. Cardiac Output
    i. Blood pressure

j. Pulse pressure
k. Mean arterial pressure
l. Peripheral (Systemic) vascular resistance

12. Describe how Starling's Law of the Heart and its significance to cardiac function
13. Define the following terms in relation to cardiac function
    a. Chronotrope
    b. Inotrope
    c. Dromotrope
14. Describe the normal and abnormal heart sounds present during cardiac function
15. Identify and define the heart sounds and relate them to hemodynamic events in the cardiac cycle
    a. S1
    b. S2
    c. S3
    d. S4
    e. Pericardial friction rub
    f. Heart murmurs
    g. Systolic
    h. Aortic stenosis
    i. Mitral valve prolapse
    j. Mitral valve regurgitation
    k. Pulmonary stenosis
    l. VSD
    m. ASD
    n. Diastolic
    o. Mitral stenosis
    p. Aortic valve regurgitation

Section 02 Cardiac Electrophysiology

1. Explain the electro-physicologic principles of the heart & cardiac conduction (**NOCP 4.5.m**)
2. Explain indications for ECG monitoring & perform 3 Lead ECG technique (**NOCP 4.5.m**)
3. Adapt technique of obtaining a 3-Lead ECG based on patient age & gender (**NOCP 4.5.m**)
4. List possible causes of abnormal cardiac rhythms (**NOCP 4.5.m**)
5. Analyze cardiac rhythms (**NOCP 4.5.m**)
6. Identify potentially lethal cardiac rhythms (**NOCP 4.5.m**)
7. Explain the principles of rhythm Interpretation (**NOCP 4.5.m**)
    a. Identify the wave parts of an ECG including: sometric line, P wave, PR interval, QRS complex, T wave, J point, ST segment, QT interval and U wave
    b. Discuss how the above waves, intervals and complexes are related to electrical activity of the heart

    c. Identify how durations, and amplitudes may be determined from ECG recordings.

d. State and demonstrate three methods of obtaining heart rates from an ECG
e. Differentiate among the primary mechanisms responsible for producing cardiac dysrhythmias
f. Describe a systematic approach to analyzing ECG rhythms
    i. Normal Sinus Rhythm
    ii. Sinus arrhythmia
    iii. Sinus arrest
    iv. Sinus bradycardia
    v. Sinus tachycardia
    vi. Supraventricular tachycardia
    vii. Atrial fibrillation
    viii. Atrial flutter
    ix. 1° AV Block
    x. 2° AV Block Type I (Wenckebach)
    xi. 2° AV Block Type II
    xii. 3° AV Block (Complete heart block)
    xiii. Junctional
    xiv. Accelerated Junctional
    xv. Junctional tachycardia
    xvi. Premature atrial, junctional and ventricular complexes
    xvii. Ventricular tachycardia
    xviii. Ventricular fibrillation
    xix. Asystole
    xx. Idioventricular rhythm
    xxi. Accelerated IVR
    xxii. Agonal/Ventricular escape
    xxiii. Left Bundle Brach block
    xxiv. Right Bundle Branch block
g. Describe the phenomena of re-entry, aberration and accessary pathways
h. Identify the ECG changes characteristically produced by electrolyte imbalances and specify their clinical implications
i. Describe the process and pitfalls of differentiating wide QRS complex tachycardias

8. 12 lead acquisition and interpretation (**NOCP 4.5.n**)
    a. Identify indications for use of a 12-Lead ECG analysis **(NOCP 4.5.n**)
    b. Relate the cardiac surfaces or areas represented by the ECG leads
    c. Perform the technique of obtaining a 12 lead ECG **(NOCP 4.5.n**)
    d. Adapt 12-Lead technique to patient age and gender**(NOCP 4.5.n**)
    e. Describe the steps to interpreting a 12 lead ECG and ECG's with additional leads **(NOCP 4.5.n**)
    f. Identify the indications for the use of additional leads (**NOCP 4.5.n**)
    g. Describe the technique for obtaining additional leads for the ECG **(NOCP 4.5.n**)
    h. Defibrillation
    i. Explain the concept and purposes of defibrillation or unsynchronized cardioversion. (**NOCP 5.5.i, j**)

j. Discuss the indications for automated external defibrillation. (**NOCP 5.5.i**)
k. Discuss the various types of automated external defibrillators. (**NOCP 5.5.i**)
l. Explain the complications to the use of automated external defibrillators. (**NOCP 5.5.i**)
m. Apply the established standards of automated external defibrillation equipment maintenance. (**NOCP 5.5.i**)
n. Operate an automated external defibrillator. (**NOCP 5.5.i**)
o. Integrate CPR procedures and automated external defibrillation procedures. (**NOCP 5.5.i**)
p. Integrate procedures to patient presentation. (**NOCP 5.5.i**)
q. Explain the difference between automated external defibrillation and manual defibrillation. (**NOCP 5.5.j**)
r. Explain the purposes of manual defibrillation. (**NOCP 5.5.j**)
s. Discuss the indications for manual defibrillation and situations where manual defibrillation is indicated. (**NOCP 5.5.j**)
t. Discuss various types of manual defibrillators. (**NOCP 5.5.j**)
u. Identify the range of energy levels recommended for prehospital defibrillation.
v. Explain the complications to the use of manual defibrillation. (**NOCP 5.5.j**)
w. Operate a manual defibrillator and demonstrate correct procedure for defibrillation. (**NOCP 5.5.j**)
x. Apply established standards of manual defibrillation equipment maintenance. (**NOCP 5.5.j**)
y. Integrate CPR procedures and manual defibrillation procedures. (**NOCP 5.5.j**)
z. Adapt manual defibrillation procedures to patient presentation. (**NOCP 5.5.j**)
aa. Adjust procedure to patient presentation. (**NOCP 5.5.j**)

9. Pacing
    a. Recognize the complications of artificial pacemakers as recognized on an ECG
    b. List the complications of pacemaker failure
    c. Identify additional hazards that interfere with artificial pacemaker function
    d. Describe the characteristics of an implanted pacemaker system
    e. Explain transcutaneous and transvenous pacing. (**NOCP 5.5.l, m**)
    f. Discuss and explain the indications, contraindications, and potential complications & equipment requires for of transcutaneous and transvenous pacing. (**NOCP 5.5.l, m**)
    g. Discuss the equipment required for transvenous pacing. (**NOCP 5.5.m**)
    h. Discuss the equipment required for transcutaneous pacing. (**NOCP 5.5.l**)
    i. Set up equipment and describe procedure for transcutaneous and transvenous pacing. (**NOCP 5.5.l, m**)
    j. Demonstrate transcutaneous pacing in a simulated setting. (**NOCP 5.5.l**)
    k. Adjust procedure to patient presentation. (**NOCP 5.5.l**)
    l. Integrate sedative and analgesic therapies with transcutaneous pacing in a simulated setting. (**NOCP 5.5.l, EHSNS**)
    m. Explain the purpose of intra-aortic balloon pumps. (**NOCP 5.5.n**)
    n. Explain the potential complications of intra-aortic balloon pumps. (**NOCP 5.5.n**)

10. Synchronized Cardioversion
    a. Explain cardioversion. (**NOCP 5.5.k**)
    b. Discuss the indications, contraindications, and potential complications of synchronized cardioversion. (**NOCP 5.5.k**)
    c. Discuss equipment required for cardioversion. (**NOCP 5.5.k**)
    d. Set up equipment to perform synchronized cardioversion. (**NOCP 5.5.k**)
    e. Demonstrate synchronized cardioversion in a simulated setting. (**NOCP 5.5.k**)
    f. Integrate sedative and analgesic therapies with manual cardioversion in a simulated setting. (**NOCP 5.5.k**)
    g. Adjust procedures to patient presentation. (**NOCP 5.5.k**)
    h. Integrate CPR and manual cardioversion. (**NOCP 5.5.k**)

Section 03 Cardiac Assessment and Management

1. Describe the incidence, morbidity, and mortality of cardiovascular disease
2. Discuss prevention strategies that may reduce the morbidity and mortality of cardiovascular disease
3. Identify the risk factors most predisposing to coronary artery disease
4. Discuss the pathophysiology of cardiac disease and injury
5. Identify and describe the components of the focused history as it relates to the patient with cardiovascular compromise
6. Identify and describe the details of inspection, auscultation, and palpation specific to the cardiovascular system
7. Define the pulse deficit, pulsus paradoxus, pulsus alternans and electrical alternans
8. Identify the normal characteristics of the point of maximal impulse (PMI)
9. Apply assessment techniques specific to the cardiovascular system. (**NOCP 4.3.c**)
10. Perform assessment techniques for cardiovascular illnesses and injuries. (**NOCP 4.3.c**)
11. Adapt assessment techniques to cardiovascular history findings. (**NOCP 4.3.c**)
12. Describe the significance of the expanded history in the setting of cardiovascular injury or illness.
13. Describe and evaluate predisposing factors for cardiovascular illness.
14. Explain and evaluate the etiology, pathophysiology and manifestations, identify the signs and symptoms, evaluate findings and describe appropriate treatment for the following cardiovascular illnesses and injuries (**NOCP 6.1.a**)
    a. Vascular disease (**NOCP Appendix 4c**)
        i. Atherosclerosis
        ii. Arteriosclerosis
        iii. Aortic Aneurysm
        iv. Thoracic Aneurysm
        v. Deep vein thrombosis
        vi. Hypertension
        vii. Peripheral Vascular Disease
    b. Inflammatory disorders (**NOCP Appendix 4c**)
        i. Endocarditis

ii. Myocarditis
iii. Pericarditis

c. Valvular disease(**NOCP Appendix 4c**)
    i. Mitral valve prolapse
    ii. Stenosis
    iii. Regurgitation
d. Acute Coronary Syndromes (**NOCP Appendix 4c**)
    i. Stable / Unstable angina pectoris
    ii. Myocardial ischemia / injury
    iii. Myocardial infarction
        1. ST Elevation MI vs. Non-ST Elevation MI
        2. Transmural vs. Subendocardial Infarct
e. Heart failure (**NOCP Appendix 4c**)
    i. Cardiomyopathies
    ii. Left heart failure
    iii. Right heart failure
    iv. Pericardial tamponade
f. Congenital abnormalities (**NOCP Appendix 4c**)
    i. Atrial septic defect
    ii. Patent ductus arteriosus
    iii. Tetrology of Fallot
    iv. Transposition of the Great Vessels
    v. Ventricular septal defect
g. Cardiac conduction disorders (**NOCP Appendix 4c**)
    i. Benign arrhythmias
    ii. Lethal arrhythmias
        1. Ventricular Fibrillation
        2. Ventricular Tachycardia without a pulse
        3. Asystole
        4. Pulseless electrical activity
    iii. Life threatening arrhythmias
        1. Sudden Arrhythmia Death Syndrome
            a. Electrical
                i. Long QT Syndrome (LQTS)
                ii. Wolff-Parkinson -White Syndrome (WPW)
                iii. Brugada Syndrome
                iv. Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT)
            b. Structural
                i. Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC)
                ii. Hypertrophic Cardiomyopathy (HCM)
                iii. Dilated Cardiomyopathy (DCM)
h. Traumatic injuries (**NOCP Appendix 4c**)

i. Aortic disruption
ii. Myocardial contusion
iii. Peripheral vascular disruption

15. List other clinical conditions that may mimic signs and symptoms of coronary artery disease and angina pectoris
16. Provide care to a patient experiencing illness or injury primarily involving the cardiovascular system. (**NOCP 6.1.a**)
17. Explain the approach to a patient presenting with illness or injury involving the cardiovascular system. (**NOCP 6.1.a**)
18. Analyze how patient history relates to patient presentation. (**NOCP 6.1.a**)
19. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.a**)
20. Infer a differential diagnosis. (**NOCP 6.1.a**)
21. Explain potential complications of illnesses and injuries to the cardiovascular system. (**NOCP 6.1.a**)
22. Integrate care based on patient presentation (**NOCP 6.1.a**)
23. Based on field impressions, identify the need for rapid intervention for the patient in cardiovascular compromise (**NOCP 6.1.a**)
24. Adjust care based on patient presentation (**NOCP 6.1.a**)
25. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.a**)
26. Justify the approach, assessment, care, and transportation decisions. (**NOCP 6.1.a**)

Section 04 Cardiac Pharmacology

7. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names
    c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
    d. Evaluate medical conditions and indications for a particular route of medication administration
    e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
    f. Explain mechanism of action
    g. Apply proper calculations for correct medication requirement for the patient presentation
    h. Distinguish approved drug routes for the medication in question
    i. Evaluate appropriate site and route of medication administration
    j. Evaluate the benefits and risks of medication administration via various possible routes
        i. Adenosine
        ii. Alteplase (TPA)

iii. Amiodarone
iv. ASA
v. Atropine
vi. Calcium chloride
vii. Calcium gluconate
viii. Dobutamine
ix. Dopamine
x. Epinephrine
xi. Furosemide
xii. Isoproterenol (Isuprel)
xiii. Lidocaine
xiv. Lovenox
xv. Magnesium sulfate
xvi. Metoprolol
xvii. Morphine sulphate
xviii. Nitroglycerine
xix. Norepinephrine
xx. Oxygen
xxi. Plavix (clopidogrel)
xxii. Procainamide
xxiii. Sodium bicarbonate
xxiv. TNK
xxv. Vasopressin

8. For the medications listed below (NOCP 5.8.o, Appendix 5):
    a. Identify the drug classification
    b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
    c. List some common examples of each classification
        i. ACE Inhibitors
            1. Captopril
            2. Vasotec
            3. Monopril
            4. Altace (ramipril)
        ii. Alpha Agonists
            1. Aldomet (methyldopa)
            2. Catapres (clonidine)
            3. Phentolamine (Regitine)
        iii. Alpha Blockers
            1. Minipres (prazosin)
            2. Cardura (doxazosin)
        iv. Angiotensin II Receptor Blockers
            1. Cozaar
            2. Atacand
            3. Diovan

v. Diuretics
    1. Lasix (Furosemide)
    2. Aldactone (spironolactone)
    3. Hydrochlorothiazide
vi. Inotropes
    1. Isoproterenol
    2. Dopamine
    3. Dobutamine
vii. Renin Blockers
    1. Aliskiren
viii. Antiarrhythmics
    1. Sodium Channel Blockers
        a. Lidocaine
    2. Beta Blockers
        a. Metoprolol
        b. Esmolol
        c. Propranolol
    3. Potassium Channel Blockers
        a. Amiodarone
    4. Calcium Channel Blockers
        a. Adalat (Nifedipine)
        b. Cardizem (Diltiazem)
        c. Verapamil (Isoptin)
ix. Cholesterol Lowering
    1. Lipitor (Atorvastatin)
    2. Crestor (Rosuvastatin)
    3. Zocor (Simvastatin)
x. Anticoagulants and Platelet Inhibitors
    1. ASA
    2. Coumadin
    3. Integrilin
    4. Lovenox (enoxaparin)
    5. Fondaparinux
    6. Plavix (clopidogrel)
    7. Ticlid
xi. Rate Control
    1. Digoxin (Digitalis)
xii. Vasodilators
    1. Diazoxide
    2. Hydralazine
    3. Sodium nitroprusside

Advanced Care Paramedic
Module 8

Musculoskeletal, Integumentary
Trauma

Module 08 Musculoskeletal, Integumentary and Trauma

The paramedic student will be exposed to the principles of trauma care in the prehospital setting while understanding the kinetics of trauma to help aid in their assessment, treatment and transport of the injured patient. The student will also look at the use of triage and Incident Command while evaluating an MCI scene. Recognizing the nature of the profession the student will also look at stress, CISD and resources available to them to maintain a healthy state in an ever stressful environment.

Section	Topic	
1	Musculoskeletal Anatomy	
2	Integumentary System Anatomy	
3	Musculoskeletal Illness and Injury	
4	Soft Tissue Illness and Injury	
5	Kinetics of Trauma	
6	Principles of Trauma Care	
7	Head Trauma	
8	Thoracic Trauma	
9	Abdominal and Pelvic Trauma	
10	MCI, Triage and CISD	
11	Pharmacology	

Time Requirements:

Didactic:	Class		
		In Class	36
		Self-Directed Learning	38
		Total	74
Lab:	Practice		24
		In-class Total	98

Reference Materials:
- Paramedic Textbook
- Medical Terminology Textbook
- Anatomy and Physiology
- Prehospital Emergency Pharmacology
- Geriatric Education for Emergency Medical Services
- Pediatric Education for Prehospital Professionals

1. List and describe the six major functions of bones. (**NOCP 4.3.j**)
2. Name the two basic types of osseous (bone) tissue. (**NOCP 4.3.j**)
3. List the five classes of bone based on shape, describe the shape, and give examples of each. (**NOCP 4.3.j**)
4. Describe the structure of a typical bone to include: (**NOCP 4.3.j**)
    a. Diaphysis
    b. Medullary cavity (contents)
    c. Epiphysis
    d. Metaphysis (epiphyseal line)
    e. Periosteum
    f. Nutrient canals (nutrient foramina)
    g. Endosteum
    h. Articular cartilage
5. State where hematopoietic tissue is found and explain how it differs for adults and infants. (**NOCP 4.3.j, n**)
6. Describe the microscopic structure of compact bone to include: (**NOCP 4.3.j**)
    a. Osteocytes
    b. Osteoblasts
    c. Osteoclasts
    d. Osteon (haversian system)
    e. Concentric lamellae
    f. Central (haversian) canal
    g. Perforating (Volkmann's canal)
    h. Lacunae
    i. Canaliculi
    j. Interstitial lamellae
7. State how the structure of spongy (cancellous) bone differs from that of compact bone. (**NOCP 4.3.j**)
8. Describe the chemical composition of bone to include: (**NOCP 4.3.j**)
    a. Organic component: cells and function
    b. Inorganic component: composition and function
9. Define osteogenesis (ossification) and state the main form it takes during the embryonic, childhood, and adult stages in life. (**NOCP 4.3.j, n, o, 6.1.g**)
10. Describe the role of growth hormone, thyroid hormone (T3 and T4), testosterone, and estrogens in the regulation of bone growth.
11. Define bone remodeling and briefly explain its process.
12. Describe the hormonal control of blood calcium and bone calcium as follows:
    a. The two hormones involved
    b. Where each hormone is produced
    c. How production of these hormones is affected by blood calcium levels.
    d. How each hormone affects the amount of calcium in bones.
13. Define osteoporosis.

14. Name the two main divisions of the skeleton and state what is included in each. (**NOCP 4.3.j, 5.7.a, b**)
15. List the major regions of the axial skeleton. (**NOCP 4.3.j, 5.7.b**)
16. Define sutures and fontanelles.
17. Describe the following characteristics of the vertebral column: (**NOCP 4.3.j, 5.7.b**)
    a. Function of the spinal cord
    b. Function of the spinal column
    c. Define vertebrae
    d. Location and function of vertebral disc
    e. Numbering system for vertebrae
18. Describe herniated disc and explain what causes the pain
19. Name four elements that make up the thoracic cage
20. Name and state the location of the two girdles of the appendicular skeleton (**NOCP 4.3.j, 5.7.a**)
21. Name and state the location of the two bones of the pectoral girdle
22. Identify the following: (**NOCP 4.3.j**)
    a. Humerus
    b. Radius
    c. Ulna
    d. Carpals
    e. Metacarpals
    f. Phalanges
23. State what forms the bony pelvis and state where the femur articulates. (**NOCP 4.3.j**)
24. Identify the following: (**NOCP 4.3.j**)
    a. Femur
    b. Patella
    c. Tibia
    d. Tarsals
    e. Metatarsals
    f. Phalanges
25. Briefly describe the five distinguishing features of a synovial joint. (**NOCP 4.3.j**)
26. Define bursae and tendons. (**NOCP 4.3.j**)
27. Describe several homeostatic imbalances of the skeletal system. (**NOCP 4.3.j**)
28. Name the three types of muscle tissue and compare according to: (**NOCP 4.3.j**)
    a. Location
    b. Striation
    c. Control
29. List three important functions of muscle. (**NOCP 4.3.j**)
30. List the five important characteristics of muscle tissue that help it carry out its functions and maintain homeostasis. (**NOCP 4.3.j**)
31. Describe the function of fascia in muscle organization and tendon formation. (**NOCP 4.3.j**)
32. Explain the blood and nervous supply of skeletal muscle. (**NOCP 4.3.j**)
33. Describe a motor unit. (**NOCP 4.3.j**)

34. Describe the junction between the muscle fibre and motor neuron (neuromuscular junction). Include the following: (**NOCP 4.3.j**)
    a. Synapse
    b. Synaptic cleft
    c. Neurotransmitter
    d. Axon terminals
    e. Motor end plate
    f. Synaptic vesicles
    g. Presynaptic neuron
    h. Muscle
35. Describe the microscopic anatomy of skeletal muscle cells (myofibres) to include the following: (**NOCP 4.3.j**)
    a. General shape and size
    b. Nuclei
    c. Sarcolemma
    d. Sarcoplasm
    e. Myofibril
    f. Striations
    g. Sarcomere
    h. Z discs
    i. Myofilaments
    j. Sarcoplasmic reticulum
    k. Transverse tubules
36. Describe the sliding filament theory of muscle contraction to include: (**NOCP 4.3.j**)
    a. Role of calcium
    b. Cross bridge attachment
    c. Acetylcholine
    d. T tubules
    e. Troponin and tropomyosin
    f. ATP
    g. Power stroke
    h. Cross bridge attachment
    i. Sarcoplasmic reticulum
37. Describe the function of myoglobin.
38. Describe the three pathways by which ATP is generated during muscle activity.
39. Define muscle fatigue and oxygen debt.
40. Describe the all or none principle of muscle contraction.
41. Define isotonic contraction, isometric contraction, and muscle tone.
42. Define origin and insertion.
43. Identify the location of the following muscles:
    a. Sternocleidomastoid
    b. Rectus abdominis
    c. Trapezius
    d. Rectus femoris

    e. Deltoid
    f. Gastrocnemius
    g. Pectoralis major
    h. Latissimus dorsi
    i. Gluteus maximus
    j. Rectus femoris
    k. Biceps brachi
    l. Internal intercostals
    m. Triceps brachi
    n. External obliques
    o. Biceps femoris
44. Describe the general anatomy of cardiac muscle. (**NOCP 4.3.c, 6.1.a**)
45. Describe the special characteristics of the heart muscle to include: (**NOCP 4.3.c, 6.1.a**)
    a. Atria
    b. Ventricles
    c. Intercalated discs
    d. Desmosomes
    e. Gap junctions
46. Describe the physiology of the cardiac muscle. (**NOCP 4.3.c, 6.1.a**)
47. Describe the anatomy of smooth muscle, including intermediate filaments and dense bodies.
48. Describe the contraction of smooth muscle.
49. Describe the regulation of smooth muscle contraction.

Section 02 Integumentary System Anatomy

1. List the organs that make up the integumentary system. (**NOCP 4.3.i**)
2. Briefly describe the functions of the skin. (**NOCP 4.3.i**)
3. Name the two principal parts of the skin and state the location of each. (**NOCP 4.3.i**)
4. State the name of the tissue immediately under the skin and state the function of this layer. (**NOCP 4.3.i**)
5. State the type of tissue making up the epidermis. (**NOCP 4.3.i**)
6. Explain how the epidermis is regenerated to include: (**NOCP 4.3.i**)
    a. Name of germinal and outer layer
    b. How cells change from inner to outer
7. Describe the function of keratinocytes and melanocytes. (**NOCP 4.3.i**)
8. Describe the dermis. (**NOCP 4.3.i**)
9. Describe the effect of melanin, carotene, and hemoglobin on skin colour. (**NOCP 4.3.i**)
10. Describe the following abnormal skin colors with possible causes: (**NOCP 4.3.i**)
    a. Cyanosis
    b. Erythema
    c. Pallor
    d. Jaundice

11. Name four types of glands associated with the skin and state the location, secretions, and functions of each. (**NOCP 4.3.i**)

Section 03 Musculoskeletal Illness and Injury

1. Explain the pathophysiology of the following musculoskeletal illnesses and injuries: (**NOCP 4.3.j**)
    a. Amputations
    b. Dislocations
    c. Muscular dystrophies
    d. Myopathies
    e. Sprains
    f. Strains
    g. Subluxations
    h. Skeletal fractures
    i. Appendicular
    j. Axial
    k. Open / closed
    l. Inflammatory disorders
    m. Arthritis
    n. Gout
    o. Osteomyelitis
    p. Osteoporosis
2. Describe the appropriate pre-hospital management of the patient with a musculoskeletal extremity injury. (**NOCP 6.1.g**)
3. Explain the pathophysiology of the following musculoskeletal illnesses and injuries: (**NOCP 4.3.j, 6.1.g**)
    a. Amputations
    b. Dislocations
    c. Muscular dystrophies
    d. Myopathies
    e. Sprains
    f. Strains
    g. Subluxations (**NOCP 4.3.j**)
4. Apply assessment techniques specific to the musculoskeletal system (**NOCP 4.3.j**)
5. Evaluate findings related to the etiology, pathophysiology, and manifestations of the musculoskeletal illnesses and injuries listed above. (**NOCP 4.3.j**)
6. Perform assessment techniques to musculoskeletal system findings. (**NOCP 4.3.j**)
7. Adapt assessment techniques for musculoskeletal illnesses and injuries. (**NOCP 4.3.j**)
8. Describe the major components involved in the inflammatory process and the modalities used to treat acute inflammation.
9. Describe the components of the healing process.
10. Describe the requirements and complications of healing.

11. Describe the nature of abnormal tissue growth disorders and the effect tumors may have on the body.
12. Explain the pathophysiology of specific musculoskeletal conditions listed in Appendix 4C. (**NOCP 6.1.g**)
13. Explain the approach to a patient presenting with illness or injury involving the musculoskeletal system. (**NOCP 6.1.g**)
14. Analyze how patient history relates to patient presentation. (**NOCP 6.1.g**)
15. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.g**)
16. Infer a differential diagnosis. (**NOCP 6.1.g**)
17. Explain potential complications of illnesses and injuries to the musculoskeletal system. (**NOCP 6.1.g**)
18. Integrate care based on patient presentation. (**NOCP 6.1.g**)
19. Adjust care based on patient presentation. (**NOCP 6.1.g**)
20. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.g**)
21. Justify the approach, assessment, care, and transportation decisions. (**NOCP 6.1.g**)
22. Adapt assessment techniques to musculoskeletal findings. (**NOCP 4.3.j**)
23. Perform safe lifting techniques. (**NOCP 3.2.a**)
24. Integrate safe and proper lifting techniques. (**NOCP 3.2.a**)
25. Identify signs and symptoms of possible fractures to the appendicular skeleton. (**NOCP 5.7.a**)
26. Distinguish between open and closed fractures. (**NOCP 5.7.a**)
27. Evaluate commercially manufactures splints for use based on patient presentation. (**NOCP 5.7.a**)
28. Modify splints to meet patient needs. (**NOCP 5.7.a, c**)
29. Explain how mechanism of injury and illness can affect injuries to appendicular skeleton. (**NOCP 5.7.a**)
30. Perform appropriate treatment to suspected fractures. (**NOCP 5.7.a, c**)

Section 04 Soft Tissue Illness and Injury

1. Name three common forms of skin cancer and describe their characteristics.
2. Conduct integumentary system and soft tissue assessment and interpret findings. (**NOCP 4.3.i**)
3. Describe and explain the classification and pathophysiology of soft tissue diseases or injuries, including: Compartment syndrome, contusions, lacerations, abrasions, penetrations (**NOCP 5.6.d**), skin infections / cellulites, skin infestation, and necrotizing fasciitis.
4. Describe the various stages of wound healing **(NOCP 5.6.f)**
5. Describe the common dressings and therapies associated with wound care **(NOCP 5.6.f)**
6. Explain the ongoing care associated with wound management **(NOCP 5.6.f)**
7. Explain the process of suturing/stapling and suture/staple removal **(NOCP 5.6.f)**
8. Perform wound care **(NOCP 5.6.f)**
9. Utilize sterile or aseptic technique as appropriate **(NOCP 5.6.f)**

10. Describe and apply assessment and management techniques for various types of Integumentary / soft tissue diseases and injuries. (**NOCP 6.1.f**)
11. Explain the physiology & evaluate findings related to the etiology, pathophysiology, and manifestations of various Integumentary / soft tissue diseases and injuries listed in App 4C. (**NOCP 4.3.i**)
12. Apply assessment techniques specific to the Integumentary system. (**NOCP 4.3.i**)
13. Perform assessment techniques for Integumentary illnesses and injuries. (**NOCP 4.3.i**)
14. Adapt assessment techniques to Integumentary history findings. (**NOCP 4.3.i**)
15. Explain the pathophysiology of specific integumentary conditions listed in Appendix 4C. (**NOCP 6.1.f**)
16. Explain the approach to a patient presenting with illness or injury involving the Integumentary system. (**NOCP 6.1.f**)
17. Analyze how patient history relates to patient presentation. (**NOCP 6.1.f**)
18. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.f**)
19. Infer a differential diagnosis. (**NOCP 6.1.f**)
20. Explain potential complications of illnesses and injuries to the Integumentary system. (**NOCP 6.1.f**)
21. Integrate care based on patient presentation. (**NOCP 6.1.f**)
22. Adjust care based on patient presentation (**NOCP 6.1.f**)
23. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.f**)
24. Justify the approach, assessment, care, and transportation decisions. (**NOCP 6.1.f**)
25. Describe the incidence, patterns, and sources of burn injury. (**NOCP 5.6.b**)
26. Describe the pathophysiology of local and systemic responses to burn injury. (**NOCP 5.6.b**)
27. Classify burn injury according to depth and severity based on established standards. (**NOCP 5.6.b**)
28. Discuss the pathophysiology of burn shock as a basis for key signs and symptoms. (**NOCP 5.6.b**)
29. Outline the physical examination of a penetrating and burn injury patient. (**NOCP 5.6.b**)
30. Describe the pre-hospital management for penetrating and burn injuries
    a. Identify the purposes of and indications for penetrating and burn dressings (**NOCP 5.6.b**, **NOCP 5.6.d)**
    b. Describe types of penetrating and burn dressings. (**NOCP 5.6.b**, **NOCP 5.6.d)**
    c. Demonstrate application of penetrating and burn dressing **(NOCP 5.6.b, NOCP 5.6.d)**
    d. Adjust to changes in patient presentation. (**NOCP 5.6.b**, **NOCP 5.6.d)**
31. Outline the general assessment and management of a patient with an inhalation injury.
32. Outline the general assessment and management of a patient who has a chemical burn injury. (**NOCP 5.6.b, 8.3.a**)
33. Describe specific complications and management techniques for selected chemical injuries. (**NOCP 8.3.a**)
34. Describe the physiological effect of electrical injury as they relate to each body system based on an understanding of key principles of electricity.

35. Outline assessment and management of a patient with an electrical injury.

36. Describe the distinguishing factors of radiation injury and considerations in the pre-hospital management of these patients. (**NOCP 8.3.a, b, c, d, e, f**)
37. Describe and apply assessment and management techniques for various types of heat related injuries. (**NOCP 6.1.n**)
38. Evaluate findings related to the etiology, pathophysiology, and manifestations of various heat related injuries. (**NOCP 6.1.n**)
39. Perform assessment techniques for various heat related injuries. (**NOCP 6.1.n**)
40. Adapt assessment techniques to heat related injury findings. (**NOCP 6.1.n**)
41. Identify purposes of and indications for soft tissue dressing, bandaging, and immobilization. (**NOCP 5.6.a**)
42. Describe the various types of dressings and bandages. (**NOCP 5.6.a**)
43. Describe aseptic technique. (**NOCP 5.6.f**)
44. Perform dressing, bandaging, and immobilization using aseptic technique. (**NOCP 5.6.a, f**)
45. Adjust to change in patient presentation. (**NOCP 5.6.a**)
46. Identify the purposes of and indications for dressing a burn. (**NOCP 5.6.b**)
47. Describe types of burn dressings. (**NOCP 5.6.b**)
48. Demonstrate application of burn dressing. (**NOCP 5.6.b**)
49. Adjust to change in patient presentation. (**NOCP 5.6.b**)

Section 05 Kinetics of Trauma

1. Describe the incidence and scope of traumatic injuries and deaths in North America.
2. Identify the role of each component of a trauma system. (**NOCP 8.2.a**)
3. Anticipate injury patterns based on an applied knowledge of mechanisms of injury, including applicable laws of physics. (**NOCP 6.1.o**)
4. Understand and explain the roles of passenger restraint systems in the prevention of injuries due to motor vehicular trauma. (**NOCP 6.1.o**)
5. Describe the three impacts that occur during motor vehicular trauma.
6. Identify injury patterns common to the following types of motor vehicle collisions:
    a. Rear end impact
    b. Head on impact
    c. Lateral impact
    d. Roll over impact
7. Identify injury patterns common to the following types of motor cycle / all-terrain vehicle collisions:
    a. Rider ejection
    b. Head on impact
    c. Lateral impact
    d. Roll over impact
8. Identify injury patterns common to vehicle - pedestrian collisions, and adapt these to age and gender.
9. Identify injury patterns common to sports related trauma, and adapt these to age and gender.

10. Identify injury patterns common to violent trauma and adapt these to age and gender.

Section 06 Principles of Trauma Care

1. Describe basic patient extrication principles. (**NOCP 3.3.c**)
2. Apply patient extrication principles. (**NOCP 3.3.c**)
3. Integrate basic extrication principles. (**NOCP 3.3.c**)
4. Identify the purposes of and indications for hemorrhage control through the use of direct pressure and patient positioning. (**NOCP 5.5.b, 5.6.a**)
    a. Describe the various types of dressings and bandages. (**NOCP 5.5.b, 5.6.a**)
5. List the steps for hemorrhage control through the use of direct pressure and patient positioning & describe aseptic techniques. (**NOCP 5.5.b, 5.6.a**)
6. Perform hemorrhage control through the use of direct pressure and patient positioning using aseptic technique. (**NOCP 5.5.b, 5.6.a**)
7. Discuss potential complications of hemorrhage control through the use of direct pressure and patient positioning. (**NOCP 5.5.b**)
8. Adapt to changes in patient presentation. (**NOCP 5.5.b, 5.6.a**)
9. Explain how the trauma indices (scores) relate to triage, transport, and destination decisions. (**NOCP 6.1.o**)
10. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.o**)
11. Demonstrate the ability to prioritize the treatment and transport decisions. (**NOCP 6.1.o**)
12. Adjust care based on patient presentation. (**NOCP 6.1.o**)
13. Communicate information to patient regarding care. (**NOCP 6.1.o**)
14. Justify approach, care, and transportation decisions. (**NOCP 6.1.o**)
15. Identify signs and symptoms of possible fractures to the axial skeleton. (**NOCP 5.7.b**)
16. Describe the relationship between kinematics and potential spine injury. (**NOCP 5.7.b**)
17. Evaluate commercially manufactures splints for use based on patient presentation. (**NOCP 5.7.b**)
18. Modify immobilization devices to meet patient needs. (**NOCP 5.7.b**)
19. Perform appropriate treatment to suspected fractures. (**NOCP 5.7.b**)
20. Identify the assessment and modify, as requires, treatment plans for the following mechanisms of injury: assault, blast Injuries, crush Injuries, falls, and rapid Deceleration Injuries.
21. Define “closed” and “open” fractures **(NOCP 5.7.c)**
22. Discuss the indications for fracture and dislocation reduction **(NOCP 5.7.c)**
23. Discuss the possible complications and their signs and symptoms of fracture and dislocation reduction **(NOCP 5.7.c)**
24. Describe the process of fracture and dislocation reduction **(NOCP 5.7.c)**

Section 07 Head Trauma

1. Explain the pathophysiology, signs, and symptoms, and treatment considerations for:
    a. Epidural hemorrhage

b. Subdural hemorrhage
c. Subarachnoid hemorrhage
d. Intracerebral hemorrhage (**NOCP 4.3.d**)

2. Evaluate findings related to the etiology, pathophysiology, and manifestations of :
    a. Epidural hemorrhage
    b. Subdural hemorrhage
    c. Subarachnoid hemorrhage
    d. Intracerebral hemorrhage (**NOCP 4.3.d**)

Section 08 Thoracic Trauma

1. Evaluate the kinematics of a variety of blunt and penetrating mechanisms of injury.
2. Describe the signs, symptoms, pathophysiology, and treatment for injuries resulting from thoracic trauma.
3. Evaluate findings related to etiology, manifestations and describe appropriate treatment as applicable and explain the pathophysiology of the following traumatic cardiorespiratory injuries & adjust changes to patient presentation:
    a. Aspirated foreign body
    b. Burns
    c. Diaphragmatic injuries
    d. Flail chest
    e. Hemothorax
    f. Penetrating / Ballistic chest injury
    g. Pneumothorax (simple or tension)
    h. Toxic inhalation
    i. Tracheobronchial disruption
    j. Aortic disruption
    k. Myocardial contusion
    l. Peripheral vascular disruption (**NOCP 4.3.c**)
    m. Penetrating Injury (**NOCP 5.6.d**)
    n. Esophageal disruption
    o. Pulmonary contusion
4. Describe equipment required for needle thoracostomy. (**NOCP 5.5.s**)
5. Demonstrate the knowledge of indications and contraindications for needle thoracostomy. (**NOCP 5.5.s**)
6. Demonstrate in a simulated setting the procedure of a needle thoracostomy. (**NOCP 5.5.s**)
7. Demonstrate the insertion of needle decompression catheter with Heimlich Valve (**NOCP 5.5.s**)
8. Describe indications for pericardiocentesis.
9. Explain the procedure for pericardiocentesis.
10. Demonstrate the knowledge of contraindications and complications of pericardiocentesis.
11. Describe the anatomy of the pleural cavity.
12. Describe the physiology of ventilation.

13. Review the changes in intrapleural pressure during ventilation.
14. Explain the purpose and indications for the use of chest tubes. (**NOCP 5.5.r**)
15. Describe the principles of operation, and components of closed chest tube drainage systems. (**NOCP 5.5.r**)
16. Describe monitoring techniques and parameters monitored for existing chest tube drainage systems. (**NOCP 5.5.r**)
17. Describe the procedure of chest tube insertion. (**NOCP 5.5.r**)
18. Explain the clinical application procedure for chest tube drainage systems. (**NOCP 5.5.r**)
19. Adapt techniques to different age groups and patient presentation. (**NOCP 5.5.r**)
20. Perform monitoring techniques for the application of existing chest drainage system. (**NOCP 5.5.r**)
21. Identify complications associated with chest tube drainage systems and their treatment. (**NOCP 5.5.r**)

Section 09 Abdominal and Pelvic Trauma

1. Identify mechanisms of injury associated with abdominal trauma.
2. Describe mechanisms of injury associated with the following:
    a. Solid abdominal organ injury
    b. Hollow abdominal organ injury
    c. Retroperitoneal organ injury
    d. Pelvic organ injuries
    e. Eviscerations
3. Explain how the trauma indices (scores) relate to triage, transport, and destination decisions. (**NOCP 6.1.o**)
4. Explain how age, gender, and health status relate to patient presentation. (**NOCP 4.3.g**)
5. Demonstrate the ability to prioritize the treatment and transport decisions. (**NOCP 4.3.a, b**)
6. Integrate care based on patient presentation. (**NOCP 4.3.a, b**)
7. Communicate information to patient regarding care.
8. Justify approach, care, and transportation decisions.

Section 10 MCI, Triage and CISD

1. Discuss triage. (**NOCP 4.1.a**)
2. Identify circumstances under which triage is required. (**NOCP 4.1.a**)
3. Evaluate a triage system. (**NOCP 4.1.a**)
4. Apply the equipment and materials used to sort victims. (**NOCP 4.1.a**)
5. Perform scene assessments based on a triage system. (**NOCP 4.1.a**)
6. Communicate with allied health providers during a scenario. (**NOCP 4.1.a**)
7. Adapt triage decision making processes. (**NOCP 4.1.a**)
8. Identify a variety of Incident Management systems (**NOCP 8.2.b**)
9. Describe the principles of an Incident Management System. (**NOCP 4.1.b, 8.2.b**)

10. Explain the various participant roles in an Incident Management System (**NOCP 8.2.b**)
11. Apply an Incident Management System structure to an incident (**NOCP 8.2.b**)
12. Analyze the effectiveness of an IMS structure to a particular event and modify event management based on Incident Management System principles. (**NOCP 4.1.c, 8.2.b**)
13. Define "stress" and recognize behaviour suggestive of a negative response. (**NOCP 3.1.c**)
14. Define "stress disorder". (**NOCP 3.1.c**)
15. Describe factors that typically contribute to personal stress. (**NOCP 3.1.c**)
16. Discuss techniques to manage stress. (**NOCP 3.1.c**)
17. Explain the concept of critical incident stress management. (**NOCP 3.1.c**)
18. Chose techniques for managing personal stress. (**NOCP 3.1.c**)
19. Discuss assertive behaviour. (**NOCP 2.4.e**)
20. Discuss aggressive behaviour.
21. Distinguish assertive and aggressive behaviour.
22. Evaluate assertive behaviour (**NOCP 2.4.e**)
23. Choose assertive behaviour in interactions. (**NOCP 2.4.e**)
24. Perform appropriate assertive behaviour in interactions. (**NOCP 2.4.e**)
25. Adapt assertive behaviour as appropriate. (**NOCP 2.4.e**)
26. Distinguish threatening and non-threatening behaviours. (**NOCP 2.3.d**)

Section 11 Pharmacology

1. For the medications listed below (**NOCP 5.8.a, o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names
    c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
    d. Evaluate medical conditions and indications for a particular route of medication administration
    e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
    f. Explain mechanism of action
    g. Apply proper calculations for correct medication requirement for the patient presentation
    h. Distinguish approved drug routes for the medication in question
    i. Evaluate appropriate site and route of medication administration
    j. Evaluate the benefits and risks of medication administration via various possible routes
        i. Fentanyl
        ii. Morphine sulphate
        iii. Alcaine
        iv. Tetracaine
        v. Meperidine
2. For the medications listed below (**NOCP 5.8.a, o, Appendix 5**):

a. Identify the drug classification
b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
c. List some common examples of each classification
    i. Acetaminophen
    ii. Codeine
    iii. Ibuprofen
    iv. Ketorolac
    v. Meperidine
    vi. Naproxen
    vii. Nitrous Oxide
    viii. Nubain

Advanced Care Paramedic
Module 9

Gastrointestinal and Genitourinary
Environmental and Toxicology

Module 09 Gastrointestinal and Genitourinary Environmental and Toxicology

With this module the student will become familiar with the assessment and management of the patient presenting with injury or illness involving the gastrointestinal, genitourinary systems, exposure to adverse environmental conditions or exposure to toxic substances.

Section	Topic	
1	Digestive System Anatomy	
2	Genitourinary System Anatomy	
3	Abdominal Injury and Disease	
4	Environmental Emergencies	
5	Toxicology	
6	Pharmacology	

Time Requirements:

Didactic:	Class		
		In Class	24
		Self-Directed Learning	22
		Total	46
Lab:	Practice		10
		In-class Total	56

Reference Materials:
- Paramedic Textbook
- Medical Terminology Textbook
- Anatomy and Physiology
- Prehospital Emergency Pharmacology
- Geriatric Education for Emergency Medical Services
- Pediatric Education for Prehospital Professionals

1. List the five basic activities of the digestive system.
2. Explain the differences between mechanical and chemical digestion.
3. List the two main groups of organs in the digestive system and the organs of each group.
4. List the four layers (tunica) of the GI tract in order from the inside out.
5. List the three layers of mucosa in order from inside out and state the type of tissue and function of each layer.
6. Name the tissue found in the submucosa and state the function of this layer.
7. Describe the arrangement of smooth muscle in the muscularis layer and describe its function.
8. State how the structure of the serosa differs above and below the diaphragm.
9. Name and state the location of the three main salivary glands.
10. State the composition and function of saliva.
11. Describe the digestive process that takes place in the oral cavity.
12. State the function of the esophagus, how food is moved down the esophagus, and how food is prevented from entering the trachea.
13. State the location of the visceral peritoneum, parietal peritoneum, and peritoneal cavity in relation to the organs of the GI tract.
14. State the function of each of the following:
    a. Mesentery
    b. Mesocolon
    c. Lesser omentum
    d. Greater omentum
    e. Falciform ligament
15. State the difference between retroperitoneal and intraperitoneal organs.
16. State the location of the stomach.
17. Describe the gross anatomy of the stomach to include:
    a. Four main regions
    b. Lesser and greater curvature.
    c. Pyloric sphincter
    d. Rugae
18. Describe the mucosa of the stomach to include:
    a. Cell type in epithelium
    b. Gastric pits
    c. Gastric glands
    d. Names, location, and secretion of the four types of gland cells.
19. Describe the arrangement and function of smooth muscle in the muscularis layer.
20. Describe mechanical that occurs in the stomach.
21. Describe the role of hydrochloric acid, pepsinogen, and mucous in the stomach.
22. Name the three phases of regulation of gastric secretion and briefly describe each.
23. State the function of the hormone gastrin.

24. State the relative times of passage for fluids, carbohydrates, proteins, and fats through the stomach.
25. State the function of intrinsic factor and name the disease that results when this factor is not produced.
26. State the location of the small intestine in relation to the rest of the GI tract.
27. Name and state the location of the three regions of the small intestine.
28. Describe the appearance and function of the plicae circulares and villi.
29. Describe the microscopic structure of a villus to include:
    a. Vessels in the core
    b. Type of epithelial tissue
30. Describe the structure and function of the absorptive and goblet cells.
31. Describe the location and appearance of the pancreas.
32. Name the two types of glandular tissue in the pancreas and the secretions of each.
33. State how pancreatic juice is delivered to the small intestine.
34. Name the three main types of enzymes in pancreatic juice and state the function of each
35. Describe the location of the liver.
36. Describe the gross appearance of the liver
37. Describe the blood supply to the liver to include:
    a. Names of the vessels entering and leaving
    b. Source of blood entering the liver
38. Define liver lobule and hepatocyte.
39. Describe the structure of a liver lobule to include:
    a. Location and structures of portal triad
    b. Location of a central vein
    c. Location and function of sinusoids
    d. Location and function of bile canaliculi
    e. Location and function of hepatic microphages (Kupffer cells)
40. Describe the flow of blood and bile through a liver lobule.
41. Name the cells producing bile and state how bile is carried to the small intestine.
42. State the role of bile salts in digestion and how bile is recycled.
43. State how bilirubin is formed and its fate in the GI tract.
44. List the nine functions of the liver and state which one is most essential for survival.
45. State the location of the gallbladder.
46. State the function of the gallbladder.
47. Describe the pathway of bile from the liver to the gallbladder to the duodenum.
48. Describe the segmentation and peristalsis and state what is accomplished by each.
49. Describe the location of the large intestine in relation to the rest of the GI tract.
50. Name and state the location of each of the following:
    a. Ileocecal sphincter
    b. Cecum
    c. Ascending colon
    d. Transverse colon
    e. Descending colon
    f. Sigmoid colon

    g. Rectum
    h. Anal canal
    i. Anus
    j. Appendix
51. Describe the wall of the large intestine to include:
    a. Taeniae coli
    b. Haustra
52. Describe the microanatomy of the large intestine to include:
    a. Types of epithelial cells in each part
    b. Main types of gland cells and secretions
    c. Presence of microvilli
53. Outline the digestive process of the large intestine.
54. Explain how intestinal contents move through the large intestines.
55. Describe the chemical digestion of carbohydrates to include:
    a. Form in which absorption takes place
    b. Role of salivary amylase, pancreatic amylase and brush border enzymes
    c. Part of the GI tract where digestion takes place
56. Describe the chemical digestion of proteins to include:
    a. Forms that may be absorbed
    b. Role of gastric acid and pepsin
    c. Role of pancreatic juice and brush border enzymes
    d. Anatomical sites of digestion
57. Describe the chemical digestion of lipids to include:
    a. Forms that may be absorbed
    b. Role of bile and pancreatic lipase
    c. Anatomic site of digestion
58. Describe chemical digestion of nucleic acids to include:
    a. Forms that are absorbed
    b. Role of pancreatic nucleases and brush border enzymes
    c. Anatomical sites of digestion
59. State the anatomic site of carbohydrate and protein absorption.
60. Describe the route of monosaccharides and amino acids from the lumen of the intestine to the general circulation.
61. Describe the absorption of lipids to include:
    a. anatomic site of absorption
    b. role of bile salts and micelles
    c. formation of chyclomicrons
    d. route to general circulation
62. Name the two vitamins produced and absorbed in the large intestine.
63. Describe the absorption of vitamin B12.
64. State the anatomic site where most of the water is absorbed from the GI tract and second site where absorption takes place.

1. Given a diagram of the urinary system, identify the following:
    a. Adrenal glands
    b. Aorta
    c. Kidneys
    d. Renal artery
    e. Ureters
    f. Renal vein
    g. Urinary bladder
    h. Inferior vena cava
    i. Urethra
2. Briefly describe the functions of the above listed components of the urinary system.
3. Given a diagram of a sagittal section of the kidney, identify and briefly describe the following structures:
    a. Renal cortex
    b. Renal medulla (pyramids)
    c. Renal papilla
    d. Lobe
    e. Renal pelvis
    f. Calcices (major and minor)
4. Label a diagram and describe the structures of a nephron to include:
    a. Afferent arteriole
    b. Proximal converted tubule
    c. Efferent arteriole
    d. Loop of Henle
    e. Glomerulus
    f. Distal converted tubule
    g. Bowman's capsule
    h. Collecting duct
    i. Renal corpuscle
5. Trace the flow of blood through the kidney from renal artery to renal vein.
6. Describe the two types of nephrons.
7. List three major functions of the kidney.
8. Define glomerular filtration.
9. Describe the function of the glomerular membrane and describe why the glomerulus is a more efficient filter than other capillary beds.
10. Define and give the normal value in mL / min for the glomerular filtration rate.
11. Define and give the composition of the glomerular filtrate or ultrafiltrate.
12. List three factors that affect glomerular filtration and explain how each procedures its effect.
13. Define net filtration pressure and state the normal value.
14. Define tubular reabsorption and state two ways in which it occurs.

15. Describe two types of passive reabsorption - osmosis and diffusion.
16. Describe the mechanism of active transport.
17. State in which part of the nephron most reabsorption occurs and how the tubular cells here are well adapted to carry out this function.
18. State where in the nephron and by what mechanism each of the following substances is reabsorbed:
    a. Water
    b. Glucose
    c. Amino acids
    d. Urea
    e. Na^+ and positive ions in general
    f. Cl^- and negative ions in general
19. Give the effect of ADH on reabsorption of water.
20. State where ADH is produced and on what part of the tubule it acts.
21. Describe the mechanism that stimulates ADH secretion.
22. Name the hormone that increases sodium reabsorption and the gland that produces it.
23. Outline the series of events that causes the hormone to be produced. Name three other substances that are reabsorbed along with Na+.
24. Define renal threshold and threshold substance.
25. Give the renal threshold value for glucose.
26. Give three examples of substances that are not threshold substances.
27. List four substances that are secreted by the tubular cells, and explain how the secretion of ammonia differs from secretion of other substances.
28. Explain how the kidneys regulate the osmotic pressure (concentration) and volume of the ECF.
29. Explain how the kidneys regulate the electrolyte balance of ECF by giving the relationship between Na+ reabsorption and:
    a. H_2O absorption
    b. K^+ secretion
    c. H^+ secretion
    d. Cl^- reabsorption
30. Outline the sequence of events by which the kidney plays a role in the maintenance of a constant pH of extracellular body fluids in a normal individual, referring to:
    a. regeneration of plasma
    b. Na^+ - H^+ secretion
    c. three buffering systems in the filtrate
31. Explain how the kidney is able to help return the pH of the ECF to normal in acidosis and alkalosis.

Section 03 Abdominal Injury and Disease

1. Describe the major disorders that may present with acute abdominal pain or discomfort. (**NOCP 4.3.g**)

2. Explain the pathophysiology and evaluate findings related to the etiology, pathophysiology and manifestations of the following gastrointestinal illnesses or injuries: pancreatitis, esophagus / stomach, esophageal varices, esophagitis, gastritis, gastroesophageal reflux, obstruction, peptic ulcer disease, upper gastrointestinal bleed. Liver / Gall Bladder - cholecystitis / biliary colic, cirrhosis, hepatitis. Small / Large Bowel – appendicitis, diverticulitis, gastroenteritis, inflammatory bowel disease, lower gastrointestinal disease, obstruction(**NOCP 4.3.g**)
3. Apply and perform assessment techniques specific to the gastrointestinal system (**NOCP 4.3.g**)
4. Adapt assessment techniques based on findings. (**NOCP 4.3.g**)
5. Explain the pathophysiology of specific gastrointestinal conditions listed in Appendix 4C (**NOCP 6.1.e**)
6. Explain the approach to a patient presenting with illness or injury involving the gastrointestinal system. (**NOCP 6.1.e**)
7. Analyze how patient history relates to patient presentation. (**NOCP 6.1.e**)
8. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.e**)
9. Infer a differential diagnosis. (**NOCP 6.1.e**)
10. Explain potential complications of illnesses and injuries to the gastrointestinal system. (**NOCP 6.1.e**)
11. Integrate care based on patient presentation. (**NOCP 6.1.e**)
12. Adjust care based on patient presentation (**NOCP 6.1.e**)
13. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.e**)
14. Justify the approach, assessment, care, and transportation decisions. (**NOCP 6.1.e**)
15. Describe the pathophysiology and signs and symptoms of renal calculi, incontinence, urinary retention, renal and urinary bladder trauma, pyelonephritis, and renal failure. (**NOCP 4.3.n**)
16. Explain the pathophysiology and evaluate findings related to the etiology, pathophysiology and manifestations of the following genitourinary illnesses or injuries: a) Reproductive disorders including; Bleeding / Discharge, Infection, Ovarian cyst, Testicular torsion, as well as b) Genitourinary Disorders such as Renal / Bladder, Colic / Calculi, Infection, Obstruction, Renal failure and Traumatic injuries (**NOCP 4.3.h**)
17. Apply, perform and adapt assessment techniques to genitourinary/reproductive systems.
18. Explain the pathophysiology of specific genitourinary/reproductive conditions listed in Appendix 4C (**NOCP 6.1.d**)
19. Explain the approach to a patient presenting with illness or injury involving the genitourinary/reproductive system. (**NOCP 6.1.d**)
20. Analyze how patient history, age, gender, and health relate to patient presentation. (**NOCP 6.1.d**)
21. Infer a differential diagnosis. (**NOCP 6.1.d**)
22. Explain potential complications of illnesses and injuries to the genitourinary/reproductive (**NOCP 6.1.d**)
23. Adjust care based on patient presentation (**NOCP 6.1.d**)

24. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.d**)
25. Justify the approach, assessment, care, and transportation decisions. (**NOCP 6.1.d**)
26.

Section 04 Environmental Emergencies

1. Define thermoregulation.
2. Explain the difference between core body temperature and surface temperature.
3. Define normal body temperature in an infant, child, adult and elderly person.
4. Discuss the methods of heat production, including five physiological mechanisms (sympathetic system) and four behavioural mechanisms.
5. Discuss the role of the hypothalamus in regards to control of body temperature.
6. Discuss factors that influence body temperature including but not limited to: age, hormones, stress, environment, nervous system integrity, integumentary system integrity, circulatory system impairment, genetics, fitness, nutrition and exercise (**NOCP 6.1.n**)
7. Explain the approach to a patient presenting with signs and symptoms due to exposure to adverse environments (**NOCP 6.1.n**)
8. Discuss conditions resulting from exposure to adverse environments (**NOCP 6.1.n**)
9. Analyze how history, age, gender, and health status relate to patient presentation. (**NOCP 6.1.n**)
10. Infer a differential diagnosis.(**NOCP 6.1.n**)
11. Integrate care based on patient presentation (**NOCP 6.1.n**)
12. Adjust care based on patient presentation (**NOCP 6.1.n**)
13. Integrate the approach, assessment, care and transportation of a patient (**NOCP 6.1.n**)
14. Justify approach, assessment, treatment and transportation of a patient **NOCP 6.1.n**)
15. Describe the role of BCLS in the severely hypothermic patient including: (**NOCP 6.1.n**)
    a. Assisted ventilations
    b. Oxygen administration
    c. Assessment of pulse in extremely hypothermic patient
    d. Appropriateness of chest compressions
    e. Rate of chest compressions in hypothermic patient
16. Describe the appropriate use of ACLS techniques in the severely hypothermic patient including: (**NOCP 6.1.n**)
    a. Orotracheal intubation
    b. Preventative measures to avoid development of VF
    c. Management of VF in hypothermic patient
    d. Role of cardiac drugs in severely hypothermic pt
17. Discuss the role of cardiopulmonary bypass re-warming in decisions about where to transport the nearly dead patient.
18. Explain the importance of the concepts “adding heat” and “active insulation”.

19. Explain how the dictum “don’t re-warm hypothermic patients in the field” may lead to poor patient care.
20. Explain why rapid re-warming is impossible in the environment and why rescuers should add as much heat as possible to severely hypothermic patients still in the environment.
21. Discuss rapid versus slow re-warming of patients unable to be transported (i.e. snowbound, vehicle failure, disaster)
22. Discuss the pros and cons of delaying patient evacuation for the purposes of re-warming or fluid replacement.
23. List the criteria for diagnosing hypothermia without a thermometer.
24. Explain the approach to a patient presenting with hypothermia. (**NOCP 6.1.n**)
25. Discuss the disease process associated with hypothermia.
26. Define mild, moderate, and severe (profound) hypothermia and its management.
27. List the predisposing factors for hypothermia.
28. Explain the pathophysiology of the body’s response to hypothermia.
29. Identify sites where temperature may be assessed by non-invasive methods. (**NOCP 4.4.c**)
30. Modify temperature check to age of patient. (**NOCP 4.4.c**)
31. Distinguish between normal and abnormal findings. (**NOCP 4.4.c**)
32. Discuss factors that influence body temperature. (**NOCP 4.4.c**)
33. Perform temperature assessment. (**NOCP 4.4.c**)
34. Adapt techniques of obtaining temperature to patient situation. (**NOCP 4.4.c**)
35. Differentiate between core and peripheral temperature monitoring (**NOCP 4.5.g**)
36. Explain various means of measuring core body temperature (**NOCP 4.5.g)**
37. Perform measurement of core temperature using the invasive method.
38. Explain indications and rationale for measuring core body temperature **(NOCP 4.5.g)**
39. Describe methods for local cold injury assessment. (**NOCP 5.6.e**)
40. Identify the purposes of and indications for caring for local cold injury. (**NOCP 5.6.e**)
41. Identify the types of tissue damage that may result from local cold injury. (**NOCP 5.6.e**)
42. Demonstrate the provision of care for local cold injury. (**NOCP 5.6.e**)
43. Adjust to changes in patient presentation. (**NOCP 5.6.e**)
44. Identify and provide emergency care for diving related injuries and conditions. (**NOCP 4.3.n**)
45. Discuss the mechanical effects of pressure and the basic properties of gases related to diving emergencies. (**NOCP 6.1.n**)
46. Describe the signs, symptoms, and treatment of diving related emergencies. (**NOCP 6.1.n**)
47. Assess and manage patients who have high altitude illness. (**NOCP 6.1.n**)
48. Discuss the physiological and pathologic changes on the body that is associated with high altitude. (**NOCP 6.1.n**)
49. Explain the approach to a patient presenting with drowning and near drowning. (**NOCP 6.1.n**)
50. Discuss disease processes that are created by drowning and near drowning. (**NOCP 6.1.n**)
51. Analyze how patient history relates to patient presentation of a drowning or near drowning patient. (**NOCP 6.1.n**)
52. Analyze how age, gender and health status relate to patient presentation of a drowning or near drowning patient. (**NOCP 6.1.n**)

53. Infer a differential diagnosis of a drowning or near drowning patient. (**NOCP 6.1.n**)
54. Adjust care based on presentation of a drowning or near drowning patient. (**NOCP 6.1.n**)
55. Communicate information to patient regarding care. (**NOCP 6.1.n**)
56. Integrate the approach, assessment, treatment, and transportation of a patient experiencing drowning or near drowning. (**NOCP 6.1.n**)
57. Justify the approach, assessment, care, and transportation decisions relating to the drowning or near drowning patient. (**NOCP 6.1.n**)
58. Discuss safety and rescue issues regarding working around aquatic (moving water, still water, and ice) environments. (**NOCP 6.1.n**)
59. Conduct assessment, explain the pathophysiology, and evaluate finding related to the etiology, pathophysiology, and manifestations of the following multi system illnesses and injuries in the listed problems, and interpret the finding of the following systemic conditions: (**NOCP 6.1.n**)
    a. Hypothermia
    b. Local cold injuries
    c. Heat cramps
    d. Heat exhaustion
    e. Heat stroke
    f. Descent / Ascent barotraumas
    g. Air emboli
    h. Decompression sickness
    i. Acute Mountain Sickness
    j. High altitude pulmonary edema
    k. High altitude cerebral edema
    l. Drowning and near drowning
    m. Radiation exposure
60. Provide care to a patient experiencing illness or injury primarily involving extremes of temperature or environment (**NOCP 6.1.n**)
61. Explain the approach to a patient presenting with illness or injury created by extreme temperatures or adverse environments. (**NOCP 6.1.n**)
62. Discuss disease processes that are created by extreme temperatures or adverse environments. (**NOCP 6.1.n**)
63. Analyze how patient history relates to patient presentation. (**NOCP 6.1.n**)
64. Analyze how age, gender and health status relate to patient presentation. (**NOCP 6.1.n**)
65. Infer a differential diagnosis. (**NOCP 6.1.n**)
66. Adjust care based on patient presentation. (**NOCP 6.1.n**)
67. Communicate information to patient regarding care. (**NOCP 6.1.n**)
68. Integrate the approach, assessment, treatment and transportation of a patient. (**NOCP 6.1.n**)
69. Justify approach, assessment, care and transportation decisions. (**NOCP 6.1.n**)

Section 05 Toxicology

1. Define poisoning and describe the general assessment for potential poisoning situations

2. Identify the toxidromes and examples of each
3. Identify signs, symptoms, and management for typical poisoning emergencies. (**NOCP 6.1.k**)
4. Identify the signs, symptoms, and management for typical inhaled toxin emergencies. . (**NOCP 6.1.k**)
5. Identify the signs, symptoms, and management for typical surface-absorbed toxin emergencies. . (**NOCP 6.1.k**)
6. Explain the pathophysiology and general management of the following toxicological illnesses:
    a. Acetaminophen overdose
    b. Acids and alkalis
    c. Alcohols
    d. Benzodiazepine overdose
    e. Beta blocker overdose
    f. Calcium channel blocker overdose
    g. Cyanide
    h. Cyclic antidepressant overdose
    i. Food poisoning
    j. Hydrocarbons
    k. Narcotic overdose
    l. Salicylate overdose
    m. Organophosphates
    n. Other prescription / non-prescription medication overdose
    o. Recreational drug overdose
7. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following alcohol related neurological disorders: . (**NOCP 6.1.k**)
    a. Chronic alcoholism
    b. Delirium Tremens
    c. Korsakov's Psychosis
    d. Wernicke's encephalopathy
8. Evaluate findings related to the etiology, pathophysiology, and manifestations of the following alcohol related neurological disorders: . (**NOCP 6.1.k**)
    a. Chronic alcoholism
    b. Delirium Tremens
    c. Korsakov's Psychosis
    d. Wernicke's encephalopathy
9. Provide care to patient experiencing illness or injury due to poisoning or overdose. (**NOCP 6.1.k**)
10. Explain the approach to a patient presenting with medical or physical disorders created from a poisoning or overdose event. (**NOCP 6.1.k**)
11. Explain the pathophysiology and presentations of the specific poisons and overdoes listed in Appendix 4C. (**NOCP 6.1.k**)
12. Analyze how patient history relates to patient presentation. (**NOCP 6.1.k**)
13. Analyze how age, gender and health status relate to patient presentation. (**NOCP 6.1.k**)

14. Infer a differential diagnosis. (**NOCP 6.1.k**)
15. Adjust care based on patient presentation. (**NOCP 6.1.k**)
16. Communicate information to patient regarding care. (**NOCP 6.1.k**)
17. Integrate the approach, assessment, treatment and transportation of a patient. (**NOCP 6.1.k**)
18. Justify approach, assessment, care and transportation decisions. (**NOCP 6.1.k**)

Section 06 Pharmacology

9. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names
    c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
    d. Evaluate medical conditions and indications for a particular route of medication administration
    e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
    f. Explain mechanism of action
    g. Apply proper calculations for correct medication requirement for the patient presentation
    h. Distinguish approved drug routes for the medication in question
    i. Evaluate appropriate site and route of medication administration
    j. Evaluate the benefits and risks of medication administration via various possible routes
        i. Dimenhydrate
        ii. Naloxone
10. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify the drug classification
    b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
    c. List some common examples of each classification
        i. Acetylcysteine
        ii. Activated Charcoal
        iii. Ipecac
        iv. Metoclopramide
        v. Flumazenil
        vi. Ondansetron
        vii. Pantoloc
        viii. Ranitidine
        ix. Cimetidine
        x. Sandostatin
        xi. Tetanus toxoid

Advanced Care Paramedic
Module 10

OB/GYN/Neonatal

Module 10 OB/GYN/Neonatal

With this module the student will become familiar with the assessment and management of a patient presenting with an OB/GYN situation or the neonatal patient.

Section	Topic	
1	Reproductive Anatomy	
2	OB/GYN	
3	Neonatal	
4	Pharmacology	

Time Requirements:

Didactic:	Class			
		In Class		24
		Self-Directed Learning		22
			Total	46
Lab:	Practice			16
			In-class Total	62

Reference Materials: Paramedic Textbook
Medical Terminology Textbook
Anatomy and Physiology
Prehospital Emergency Pharmacology

1. Discuss the development of the reproductive systems including sexual differentiation during embryonic development and the changes that occur in puberty
2. Discuss the hormonal relationship to the development of the reproductive anatomy
3. Identify the organs and accessory organs of the female reproductive system and discuss their function:
    a. Vulva
    b. Mons pubis
    c. Prepuce
    d. Labia majora
    e. Labia minora
    f. Clitoris
    g. Vestibule
    h. Introitus (Vaginal orifice)
    i. Hymen
    j. Urinary meatus
    k. Perineum
    l. Paraurethral glands
    m. Greater vestibular glands
    n. Vagina
    o. Ovaries
    p. Fallopian Tubes
    q. Fimbriae
    r. Uterus
4. Discuss the female sex hormones and identify their mechanism of action
5. Discuss the menstrual cycle and its components
6. Identify the components of the breast and identify their function
    a. Nipple
    b. Areola
    c. Glands of Montgomery
    d. Alveolus
    e. Ductule
    f. Duct
7. Discuss how prolactin and oxytocin aid in the development and ejection of milk
8. Identify the organs and accessory organs of the male reproductive system and discuss their function:
    a. Testes
    b. Epididymis
    c. Vas Deferens
    d. Urethra
    e. Scrotum
    f. Penis

g. Seminiferous tubules
h. Rete testis
i. Glans penis
j. Prostate gland
k. Utricle
l. Ejaculatory orifice and duct
m. Cowper gland

9. Discuss spermatogenesis
10. Discuss the male sex hormones and identify their mechanism of action

Section 02 OB/GYN

1. Describe the physiological processes of menstruation and ovulation
2. Describe the pathophysiology of the following non traumatic causes of abdominal pain in the female patient:
    a. Pelvic inflammatory disease
    b. Ruptured ovarian cyst
    c. Cystitis
    d. Dysmenorrhea
    e. Mittelschmerz
    f. Endometriosis
    g. Ectopic pregnancy
    h. Vaginal bleeding
3. Describe the pathophysiology of traumatic causes of abdominal pain in females.
4. Outline the pre-hospital assessment and management of the female with abdominal pain.
5. Outline specific assessment and management for the patient who has been sexually assaulted.
6. Describe specific pre-hospital measures to preserve evidence in sexual assault cases.
7. Calculate EDC (Estimated Date of Confinement).
8. Perform a pertinent history on a pregnant woman including: (**NOCP 4.3.f**)
    a. Para
    b. Gravida
    c. Previous complications
    d. Expected complications
    e. Expected delivery date
9. Perform physical examination on a pregnant patient. (**NOCP 4.3.f**)
10. Define types of abortions.
11. Relate pre-hospital management of abortions.
12. Explain and evaluate findings related to the etiology, predisposing factors, pathophysiology, manifestations and management of the following illnesses: (**NOCP 4.3.f**)
    a. Abruptio placenta
    b. Eclampsia
    c. Ectopic pregnancy

    d. First trimester bleeding
    e. Placenta previa
    f. Pre-eclampsia
    g. Third trimester bleeding
    h. Trauma
    i. Uterine rupture
    j. Abnormal presentations
    k. Amniotic embolus
    l. Post-partum hemorrhage
    m. Prolapsed cord
    n. Uterine inversion
13. Explain the approach to a pregnant patient. (**NOCP 6.1.q**)
    a. Perform assessment techniques for obstetrical related illness or injury (**NOCP 4.3.f**)
    b. Adapt assessment techniques based on findings (**NOCP 4.3.f**)
14. Explain disease processes that interfere with labour and delivery (**NOCP 6.1.q**)
15. Explain complications of labour and delivery. (**NOCP 6.1.q**)
16. Analyze how patient history relates to patient presentation. (**NOCP 6.1.q**)
17. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.q**)
18. Describe and discuss how to determine if the patient in labour should be transported or if preparation should be made to deliver the baby on scene. (**NOCP 4.3.f**)
19. Assess contractions for frequency, duration, and intensity.
20. State normal ranges of and monitor fetal heart rate.
21. Discuss indications that suggest the need to prepare for imminent delivery. (**NOCP 6.1.q**)
22. Adjust care to manage and imminent delivery. (**NOCP 6.1.q**)
23. Integrate care based on fetal and maternal presentation. (**NOCP 6.1.q**)
24. Describe how to assess the progression of labour in preparation for prehospital delivery.
25. Describe how to prepare for immediate delivery, including the supplies and equipment.
26. Describe the procedures and techniques used in a normal cephalic delivery.
27. Describe how to control the head of the baby during delivery.
28. Describe the method of assisting the mother's breathing pattern during labour.
29. Describe how to suction the newborn.
30. Relate how to administer oxygen to the newborn.
31. Following delivery, describe how to clamp / tie and cut the cord.
32. Describe how to manage the cord if it begins to bleed from either end after it has been clamped / tied and cut.
33. Describe the delivery of the placenta including the signs that indicate delivery is imminent.
34. State the volume which is considered normal blood loss during the delivery process.
35. Describe the management of the mother following delivery, including management of the uterus.
36. Relate causes of post-partum hemorrhage and methods of controlling body temperature and the use of oxygen.

37. Describe the management of a well newborn following delivery, including method of managing the airway, controlling body temperature, and the use of oxygen.
38. Take an APGAR score on a newborn at one minute and five minutes, and relate findings to a baby's condition.
39. Describe the procedures and techniques used for the delivery of breech presentations including potential difficulties, procedure to follow when baby's head is pressed against the vaginal wall, and when the head of the baby does not deliver within three minutes of the trunk.
40. Describe the procedures and techniques used for the delivery of prolapsed cord presentations including common causes, potential problems, and things to avoid when confronted with a prolapsed cord
41. Relate signs of maternal and or fetal distress.
42. Describe the management of intrauterine fetal complications such as cord around neck, intact amniotic sac with head presentation, and premature rupture of amniotic membrane
43. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.q**)
44. Communicate information to patient regarding care. (**NOCP 6.1.q**)
45. Justify the approach, assessment, care, and transportation decisions (**NOCP 6.1.q**).
46. Perform appropriate assessment techniques for the neonatal patient (**NOCP 4.3.o**)
47. Adjust assessment techniques and care based on findings (**NOCP 4.3.o**)

Section 03 Neonatal

1. Define "neonatal patient", describe and discuss newborn resuscitation. (**NOCP 4.3.l**)
2. Describe the changes in physiology that occur when a baby is born (**NOCP 6.2.a**)
3. Describe the systematic approach to assessment and treatment during neonatal resuscitation (**NOCP 4.3.a, b**)
4. Review neonatal basic life support.
5. Identify important antepartum factors that can affect childbirth (**NOCP 6.2.a**)
6. Identify important intrapartum factors that can determine high-risk newborn patients (**NOCP 6.2.a**)
7. Identify the factors that lead to premature birth and low-birth-weight newborns.
8. Distinguish between primary and secondary apnea.
9. Discuss pulmonary perfusion and asphyxia.
10. Describe and discuss the recognition of respiratory failure and shock in the newborn.
11. Describe and discuss basic and advanced neonatal airway management.
12. Describe the indications, equipment needed, application and evaluation of the following management:
    a. Blow-by oxygen
    b. Ventilatory assistance
    c. Endotracheal intubation
    d. Orogastric tube
    e. Chest compressions

f. Vascular access

13. Describe and discuss fluid therapy and medications utilized in neonatal resuscitation.
14. Describe and discuss cardiac rhythm disturbances encountered during neonatal resuscitation.
15. Discuss the equipment and personnel required during resuscitation
16. Demonstrate assessment and management skills of various neonatal emergencies including cardiopulmonary arrest, respiratory failure, and shock.
17. Describe the initial steps in resuscitation of the neonatal patient.
18. Identify the primary signs utilized for evaluating a newborn during resuscitation.
19. Identify the appropriate use of the APGAR scale.
20. Calculate the APGAR score given various newborn situations.
21. Demonstrate the ability to perform a simulated neonatal resuscitation.
22. Discuss the effects of maternal narcotic use on the newborn.
23. Determine the appropriate treatment for the newborn with narcotic depression.
24. Utilize the Braslow tape in the management of the neonatal patient.
25. Apply assessment techniques specific to the neonatal patient.
26. Perform appropriate assessment techniques for neonatal patients. (**NOCP 4.3.l**)
27. Adjust assessment techniques as required.
28. Discuss special situations that may complicate resuscitation and cause ongoing problems (**NOCP 6.2.a**)
29. Discuss disease processes that interfere with neonatal life functions. (**NOCP 6.2.a**)
30. Discuss relationship between gestational age, presentation, and care. (**NOCP 6.2.a**)
31. Infer a differential diagnosis.
32. Adjust care based on patient presentation. (**NOCP 6.2.a**)
33. Discuss potential complications that can occur when dealing with neonatal patients. (**NOCP 6.2.a**)
34. Integrate the approach, assessment, transportation of a patient. (**NOCP 6.2.a**)
35. Adjust care based on patient presentation (**NOCP 6.2.a**)
36. Justify approach, assessment, care, and transport decisions. (**NOCP 6.2.a**)
37. Discuss and manage the post-resuscitation care of a neonate (**NOCP 6.2.a**)
38. Identify the risk factors associated with preterm birth
39. Recognize and initiate specific care and treatment of the preterm neonate (**NOCP 6.2.a, 6.3.a, b**)
40. Explain and evaluate the epidemiology, pathophysiology, assessment findings and management of neonatal patient injuries and illnesses including; Meconium aspiration, ,Apnea, Diaphragmatic hernia, Bradycardia, Prematurity (**NOCP 4.3.l**), Respiratory distress/cyanosis, Seizures, Fever, Hypothermia, Hypoglycemia, Vomiting, Diarrhea, Common birth injuries, Cardiac arrest, Post-arrest management and Cold stress (**NOCP 4.3.l**)
41. Explain and evaluate findings related to the etiology, predisposing factors, pathophysiology, manifestations and management of the following illnesses and injuries related to neonatal conditions: (**NOCP 4.3.l**)
    a. Cardiovascular insufficiency
    b. Meconium aspiration

c. Patent ductus arteriosus
d. Respiratory insufficiency
e. Tetrology of Fallot

42. Apply assessment techniques specific to the neonatal patient **(NOCP 4.3.l)**
43. Perform appropriate techniques for neonatal patients **(NOCP 4.3.l)**
44. Adjust assessment techniques as required **(NOCP 4.3.l)**
45. Explain the importance of effective team dynamics, including individual roles and responsibilities during a resuscitation (**NOCP 8.1.c**)
46. Discuss the ethical principles associated with neonatal resuscitation (**NOCP 1.1.j**)
47. Discuss communication techniques with parents (**NOCP 2.1.e, 2.4.b, c**)

Section 04 Pharmacology

11. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names
    c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
    d. Evaluate medical conditions and indications for a particular route of medication administration
    e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
    f. Explain mechanism of action
    g. Apply proper calculations for correct medication requirement for the patient presentation
    h. Distinguish approved drug routes for the medication in question
    i. Evaluate appropriate site and route of medication administration
    j. Evaluate the benefits and risks of medication administration via various possible routes
        i. Epinephrine
        ii. Oxytocin
        iii. Magnesium Sulfate
12. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify the drug classification
    b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
    c. List some common examples of each classification
        i. Ergonovine
        ii. Terbutaline

Advanced Care Paramedic
Module 11

Special Situations

Module 11 Special Situations

With this module the student will become familiar with specific patient populations and explore the challenges associated with these particular demographics.

Section	Topic	
1	Pediatrics	
2	Geriatrics	
3	Special Needs	
4	Terminal Illness	
5	Psychiatry	
6	CBRNE	
7	Pharmacology	
8	Vascular Access	
9	Pharmacology	

Time Requirements:

Didactic:	Class		
		In Class	24
		Self-Directed Learning	22
		Total	46
Lab:	Practice		10
		In-class Total	56

Reference Materials:
- Paramedic Textbook
- Medical Terminology Textbook
- Anatomy and Physiology
- Prehospital Emergency Pharmacology
- Geriatric Education for Emergency Medical Services
- Pediatric Education for Prehospital Professionals

1. Identify and define a child's primary emotional response to interactions with EMS practitioners.
2. Define " pediatric " patient and identify and describe the developmental milestone of pediatric patients of the following age groups and what additional assessment techniques may be used: (**NOCP 4.3.n**)
    a. Birth to six months
    b. Six months to twelve months
    c. Toddler (one to three years)
    d. Preschooler (three to five years)
    e. School age (six to twelve years)
    f. Adolescent (thirteen to eighteen years)
3. Identify the family's response to a pediatric crisis. (**NOCP 2.1.e**)
4. Identify five guidelines the EMS practitioner should utilize in dealing with the families response to a pediatric crisis.
5. Identify and describe guidelines for verbal and non-verbal communication with parents who are experiencing a pediatric emergency. (**NOCP 2.1.e, 2.3.a**)
6. Identify the anatomical or physiologic differences between children and adults for each of the following areas: (**NOCP 4.3.n**)
    a. Skin and body surface
    b. Head
    c. Airway
    d. Chest and lungs
    e. Heart and circulation
    f. Abdomen
    g. Extremities
    h. Nervous system
7. Identify and interpret the findings of the following components of a pediatric physical examination: (**NOCP 4.3.n**)
    a. Skin and body surface
    b. Head
    c. Airway
    d. Chest and lungs
    e. Heart and circulation
    f. Abdomen
    g. Extremities
    h. Nervous system
8. Outline differences in adult and childhood anatomy, physiology, and "normal" age-group related vital signs. (**NOCP 4.3.n**)
9. Discuss the appropriate equipment utilized to obtain pediatric vital signs.
10. Identify signs associated with common pediatric emergencies. (**NOCP 4.3.n**)
11. Describe the history, assessment and management of an airway obstruction resulting from the aspiration of a foreign body. (**NOCP 4.3.a, 5.1,a, b, c, l, j**)

12. Determine appropriate airway adjuncts, ventilation devices, and endotracheal intubation equipment; their proper use; and complications of use for infants and children. (**NOCP 5.1.a, b, c, d, e, f, g, h**)
13. List the indications and methods of gastric decompression for infants and children. (**NOCP 5.5.t**)
14. Define pediatric respiratory distress, failure, and arrest. (**NOCP 4.3.n**)
15. Differentiate between upper airway obstruction and lower airway disease. (**NOCP 4.4.b**)
16. Describe the general approach to the treatment of children with respiratory distress, failure, or arrest from upper airway obstruction or lower airway disease. (**NOCP 4.4.b**)
17. Demonstrate the use of the appropriate bag valve mask device and associated equipment. (**NOCP 5.1.a, 5.4.a**)
18. Describe the history, assessment and management of: (**NOCP 6.1.c**)
    a. Asthma
    b. Status asthmaticus
    c. Bronchiolitis
    d. Croup
    e. Epiglottitis
19. Discuss the common causes and relative severity of hypoperfusion in infants and children. (**NOCP 4.3.n**)
20. Identify the major classifications of pediatric cardiac rhythms. (**NOCP 4.3.n, 6.1.a**)
21. Discuss the primary etiologies of cardiopulmonary arrest in infants and children. (**NOCP 4.3.n, 6.1.a**)
22. Describe the primary etiologies of altered level of consciousness in infants and children. (**NOCP 4.3.n, 4.4.i**)
23. Describe the history, assessment and management
    a. Hyperthermia
    b. Hypothermia
    c. Seizures
    d. Meningitis
    e. Dehydration
    f. Hypoglycemia
    g. Diabetic ketoacidosis
24. Identify common lethal mechanisms of injury in infants and children. (**NOCP 4.3..n, 5.7.b, 6.1.o**)
25. Discuss anatomical features of children that predispose or protect them from certain injuries. (**NOCP 4.3.n, 6.1.o**)
26. Describe aspects of infant and child airway management that are affected by potential cervical spine injury. (**NOCP 4.3.n, 5.7.b, 6.1.o**)
27. Identify infant and child trauma patients who require spinal immobilization. (**NOCP 4.3.n, 5.7.b, 6.1.o**)
28. Discuss fluid management and shock treatment for infant and child trauma patients. (**NOCP 4.3.n, 6.1.o**)
29. Determine when pain management and sedation are appropriate for infants and children. (**NOCP 4.3.n, 5.8.a, o**)

30. Define child abuse, child neglect, and sudden infant death syndrome (SIDS). (**NOCP 6.2.b**)
31. Discuss the parent/caregiver responses to the death of an infant or child. (**NOCP 2.4.c**)
32. Describe the history, assessment and management of common traumatic emergencies in the pediatric patient. (**NOCP 4.3.n, 6.1.o**)
33. Review pediatric basic life support.
34. Discuss basic cardiac life support (CPR) guidelines for infants and children.
35. Integrate advanced life support skills with basic cardiac life support for infants and children.
36. Discuss the indications, dosage, route of administration, and special considerations for medication administration in infants and children. (**NOCP 5.8.a, o**)
37. Describe and discuss pediatric vascular access. (**NOCP 5.5.d**)
38. Discuss the purposes and indications for intraosseous needle insertion and infusion (**NOCP 5.5.e**)
39. Discuss the complications of intraosseous needle insertion and infusion (**NOCP 5.5.e**)
40. Identify the equipment necessary to perform intraosseous infusion in the prehospital setting. (**NOCP 5.5.e**)
41. List the steps of intraosseous needle insertion. (**NOCP 5.5.e**)
42. Perform intraosseous needle insertion in a simulated setting. (**NOCP 5.5.e**)
43. Simulate adapting care to changes in patient presentation. (**NOCP 5.5.e**)
44. List medical conditions and patient indications for intraosseous medication administration. (**NOCP 5.5.e, 5.8.a, o**)
45. Apply proper calculations for correct medication requirement for the patient presentation. (**NOCP 5.8.a, o**)
46. Utilize the Braslow Tape in the management of the pediatric patient. (**NOCP 4.3.n**)
47. Distinguish those approved drugs that are given via the intraosseous route. (**NOCP 5.5.e, 5.8.a, o**)
48. Evaluate appropriate site for the injection. (**NOCP 5.5.e**)
49. Evaluate the benefit of medication administration via the intraosseous route in comparison to other routes. (**NOCP 5.5.e**)
50. Demonstrate how to provide intraosseous medication administration using a sequential step by step method. (**NOCP 5.5.e**)
51. Demonstrate how to prepare a patient for intraosseous medication administration. (**NOCP 5.5.e**)
52. Demonstrate how to measure the required quantity of intraosseous medication. (**NOCP 5.5.e**)
53. Describe and discuss fluid therapy and medications utilized in pediatric resuscitation (**NOCP 4.3.n, 5.5.c, 5.8.a, o**)
54. Describe and discuss cardiac rhythm disturbances encountered during pediatric resuscitation.
55. Describe the initial steps in resuscitation of the pediatric patient.
56. Modify assessment approach based on presentation and findings. (**NOCP 4.3.n**)
57. Identify possible abuse or neglect of the pediatric patient. (**NOCP 6.2.b**)
58. Perform appropriate assessment techniques for the pediatric patient. (**NOCP 4.3.n**)

59. Integrate the approach, assessment, treatment, and transportation of the pediatric patient. (**NOCP 4.3.n**)
60. Communicate information regarding care to a patient, parents, or primary care giver. (**NOCP 4.3.n**)
61. Justify approach, care, and transportation decisions. (**NOCP 4.3.n**)

Section 02 Geriatrics

1. Define "geriatric" patient. (**NOCP 4.3.o**)
2. Discuss the demographics demonstrating the increasing size of the elderly population in Canada.
3. Assess the various living environments of elderly patients. (**NOCP 4.3.o**)
4. Describe the aging process and its effect on the body. (**NOCP 4.3.o**)
5. Discuss society's view of aging and the social, financial, and ethical issues facing the elderly. (**NOCP 4.3.o**)
6. Discuss common emotional and psychological reactions to aging, including causes and manifestations. (**NOCP 4.3.o**)
7. Describe the normal assessment findings in a geriatric patient. (**NOCP 4.3.o**)
8. Apply the pathophysiology of multi-system failure to the assessment and management of medical conditions in the elderly patient. (**NOCP 4.3.o**)
9. Discuss the problem of mobility in the elderly, and develop strategies to prevent falls. (**NOCP 4.3.o, 8.1.a, b**)
10. Discuss age-related changes in sensations in the elderly, and describe the implications of these changes for communication and patient assessment. (**NOCP 4.3.o**)
11. Discuss the problems with continence and elimination in the elderly patient, and develop communication strategies to provide psychological support. (**NOCP 4.3.o**)
12. Discuss factors that may complicate the assessment of the elderly patient. (**NOCP 4.3.o**)
13. Describe the principles that should be employed when assessing and communicating with the elderly. (**NOCP 4.3.o**)
14. Modify typical assessment approach as necessary for a geriatric patient. (**NOCP 4.3.o**)
15. Discuss common signs and symptoms associated with geriatric emergencies. (**NOCP 4.3.o**)
16. Discuss common geriatric medical and traumatic emergencies. (**NOCP 4.3.o**)
17. Discuss common complaints of elderly patients. (**NOCP 4.3.o**)
18. Discuss the normal and abnormal changes with age in relation to the: (**NOCP 4.3.o**)
    a. Pulmonary system (**NOCP 6.1.c**)
    b. Cardiovascular system (**NOCP 6.1.a**)
    c. Nervous system (**NOCP 6.1.b**)
    d. Endocrine system (**NOCP 6.1.i**)
    e. Gastrointestinal system (**NOCP 6.1.e**)
    f. Thermoregulatory system
    g. Integumentary system (**NOCP 6.1.f**)
    h. Musculoskeletal system (**NOCP 6.1.g**)

19. Describe the incidence, morbidity/mortality, risk factors, prevention strategies, pathophysiology, assessment, need for intervention and transport, and management for elderly medical patients with:
    a. Pneumonia (**NOCP 6.1.c**)
    b. Chronic obstructive pulmonary disease (**NOCP 6.1.c**)
    c. Pulmonary embolism (**NOCP 6.1.a**)
    d. Myocardial infarction (**NOCP 6.1.a**)
    e. Heart failure (**NOCP 6.1.a**)
    f. Dysrhythmias (**NOCP 4.5.m, n, 6.1.a**)
    g. Aneurysm (**NOCP 6.1.a**)
    h. Hypertension (**NOCP 6.1.a**)
    i. Cerebral vascular disease (**NOCP 6.1.a**)
    j. Delirium (**NOCP 6.1.b**)
    k. Dementia (**NOCP 6.1.b**)
    l. Alzheimer's disease (**NOCP 6.1.b**)
    m. Parkinson's disease (**NOCP 6.1.b**)
    n. Diabetes and thyroid diseases. (**NOCP 6.1.i**)
    o. Gastrointestinal problems, GI hemorrhage, and bowel obstruction. (**NOCP 6.1.e**)
    p. Skin diseases and pressure ulcers (**NOCP 6.1.f**)
    q. Osteoarthritis and osteoporosis (**NOCP 6.1.g**)
    r. Hypothermia and hyperthermia (**NOCP 6.1.n**)
    s. Toxicological problems (**NOCP 6.1.k**)
    t. Psychological disorders, including depression and suicide (**NOCP 6.1.p**)
20. Describe the incidence, morbidity/mortality, risk factors, prevention strategies, pathophysiology, assessment, need for intervention and transport, and management of the elderly trauma patient with: Orthopedic injuries (**NOCP 6.1.g**), Burns (**NOCP 5.6.b**) and Head injuries.
21. Identify possible abuse or neglect of the geriatric patient (**NOCP 6.2.c**)
22. Integrate variations to approach, treatment and transport methods (**NOCP 6.2.c**)
23. Justify variations in approach, assessment, care and transport decisions (**NOCP 6.2.c**)
24. Perform appropriate assessment techniques for the geriatric patient. (**NOCP 4.3.o**)
25. Compare the pharmacokinetics of an elderly patient to that of a young patient, including drug distribution, metabolism, and excretion. (**NOCP 4.3.o, 5.8.a, o**)
26. Discuss the impact of polypharmacy, dosing errors, increased drug sensitivity, and medication non-compliance on assessment and management of the elderly patient. (**NOCP 4.3.o, 5.8.a, o**)
27. Discuss the use and effects of commonly prescribed drugs for the elderly patient. (**NOCP 4.3.o**)
28. Integrate the approach, assessment, treatment, and transportation of the geriatric patient. (**NOCP 4.3.o**)
29. Communicate information regarding care to patient, relatives or primary care givers.
30. Justify approach, assessment, care, and transportation decisions. (**NOCP 4.3.o**)
31. Provide care to a geriatric patient experiencing illness or injury.

1. Define “physically impaired patient” and modify assessment approach (**NOCP 6.2.d**)
2. Define “mentally impaired patient” and modify assessment approach (**NOCP 6.2.e**)
3. Describe the various etiologies and types, recognize patients with, and anticipate accommodations that may be needed in order to properly manage each of the following conditions: (**NOCP 6.2.d**)
    a. Visual impairments
    b. Speech impairments
    c. Obesity
    d. Paraplegia/quadriplegia
    e. Mental illness
    f. Developmentally disabled
    g. Down syndrome
    h. Emotional impairment/mental challenges
4. Describe, identify possible presenting signs, and anticipate accommodations for the following diseases/illnesses:
    a. Arthritis
    b. Cancer
    c. Cerebral palsy
    d. Cystic fibrosis
    e. Multiple sclerosis
    f. Muscular dystrophy
    g. Myasthenia gravis
    h. Poliomyelitis
    i. Spina bifida
    j. Head injury
5. Define, recognize, and anticipate accommodations needed to properly manage patients who:
    a. are culturally diverse
    b. are terminally ill (**NOCP 6.1.m**)
    c. have a communicable disease
6. Identify possible abuse or neglect of the physically challenged patient. (**NOCP 6.2.d**)
7. Discuss common medical emergencies associated with mentally impaired patients. (**NOCP 6.2.e**)
8. Discuss common trauma emergencies associated with mentally impaired patients. (**NOCP 6.2.e**)
9. Identify possible abuse or neglect of the mentally impaired patient (**NOCP 6.2.e**)
10. Identify community support programs. (**NOCP 8.1.d**)
11. Discuss situations which may require the expertise of community support agencies. (**NOCP 8.1.d**)
12. Discuss legislative requirements. (**NOCP 8.1.d**)
13. Acknowledge the need for additional intervention in appropriate patient populations. (**NOCP 8.1.d**)

14. Acknowledge the need for additional intervention. (**NOCP 8.1.d**)
15. Perform appropriate assessment techniques for the physically impaired patient (**NOCP 6.2.d**)
16. Integrate the approach, assessment, treatment, and transportation of the physically impaired patient. (**NOCP 6.2.d**)
17. Discuss common medical/trauma emergencies physically-impaired patients (**NOCP 6.2.d**)
18. Justify approach, assessment, care, and transportation decisions. (**NOCP 6.2.d**)
19. Perform appropriate assessment techniques for the mentally impaired patient. (**NOCP 6.2.e**)
20. Integrate the approach, assessment, treatment, and transportation of the mentally impaired patient. (**NOCP 6.2.e**)
21. Perform appropriate assessment techniques for the mentally impaired patient. (**NOCP 6.2.e**)
22. Justify approach, assessment, care, and transportation decisions. (**NOCP 6.2.e**)
23. Integrate ongoing assessments based on patient presentation. (**NOCP 6.3.a**)
24. Evaluate results of ongoing assessments. (**NOCP 6.3.a**)
25. Integrate assessment and patient care procedures. (**NOCP 6.3.a**)
26. Justify ongoing assessment decisions. (**NOCP 6.3.a**)
27. Adjust management priorities. (**NOCP 6.3.b**)
28. Communicate changes to patient to patient, family, or primary care giver. (**NOCP 6.2.e, 6.3.b**)
29. Justify approach, assessment, and transportation decisions. (**NOCP 6.2.e, 6.3.b**)
30. Identify the purpose of an ostomy drainage system. (**NOCP 5.5.p**)
31. Identify equipment for ostomy drainage. (**NOCP 5.5.p**)
32. Explain how the site of the ostomy relates to patient condition and potential complications. (**NOCP 5.5.p**)
33. Describe the components of an ostomy drainage bag. (**NOCP 5.5.p**)
34. Demonstrate routine care for a patient with an ostomy drainage system in a simulated setting. (**NOCP 5.5.p**)
35. Discuss the indications, contraindications, and potential complications of nasogastric tube insertion. (**NOCP 5.5.t**)
36. Describe the equipment required and the procedure for performing nasogastric insertion and nasogastric tube removal. (**NOCP 5.5.t**)
37. Demonstrate oral & nasogastric tube insertion in a simulated setting. (**NOCP 5.5.t**)
38. Adapt techniques to various patient age groups and types. (**NOCP 5.5.t**)
39. Identify the purpose of a urinary catheter and manage patient/equipment (**NOCP 5.5.o**)
40. List the indications, contraindications, and potential complications of prehospital urinary catheterization. (**NOCP 5.5.u**)
41. Describe the equipment required and the procedure for performing urinary catheterization and for non-catheter urinary drainage systems. (**NOCP 5.5.u**)
42. Explain how catheter size can affect the patient. (**NOCP 5.5.u**)
43. Discuss relationship between urine output and patient condition. (**NOCP 5.5.o**)
44. Explain potential complications to catheter care. (**NOCP 5.5.o**)
45. Describe differences in catheterization of male and female patients. (**NOCP 5.5.u**)

46. Discuss equipment for non-catheter urinary drainage. (**NOCP 5.5.q**)
47. Discuss the purpose of non-catheter urinary drainage. (**NOCP 5.5.q**)
48. Discuss urine output relative to patient condition. (**NOCP 5.5.q**)
49. Discuss the procedures for the routine care of a patient with a non-catheter urinary drainage system. (**NOCP 5.5.q**)
50. Adapt techniques to various age groups and special situations. (**NOCP 5.5.o**)
51. Demonstrate how to drain and measure urine output in a simulated setting. (**NOCP 5.5.o**)
52. Discuss the indications, contraindications, and possible complications of gastric intubation and orogastric lavage. (**NOCP 5.5.t**)
53. Describe the equipment required for performing orogastric intubation and lavage, and the procedure. (**NOCP 5.5.t**)
54. Demonstrate orogastric intubation in a simulated setting. (**NOCP 5.5.t**)
55. Adapt techniques to various patient age groups and types. (**NOCP 5.5.t**)
56. Describe the indications, contraindications and potential complications of using sterile techniques with dressing care. (**NOCP 5.6.f**)
57. Describe the equipment required to perform sterile techniques with dressing care. (**NOCP 5.6.f**)
58. Demonstrate using sterile techniques with dressing care. (**NOCP 5.6.f**)
59. Compare and contrast the primary objectives of the paramedic and the home care provider. (**NOCP 8.1.c**)
60. Identify the importance of home health care medicine as it relates to emergency medical services. (**NOCP 8.1.c**)
61. Differentiate between the role of the paramedic and the role of the home care provider. (**NOCP 8.1.c**)
62. Compare and contrast the primary objectives of acute care, home care, and hospice care. (**NOCP 8.1.c**)
63. Discuss aspects of home care that enhance the quality of patient care and aspects that have the potential to become detrimental. (**NOCP 8.1.c**)
64. List pathologies and complications in home care patients that commonly result in ALS intervention. (**NOCP 4.3.o, 8.1.c**)
65. Compare the cost, mortality, and quality of care for a given patient in the hospital versus the home care setting. (**NOCP 8.1.c**)
66. Discuss the significance of palliative care programs as related to a patient in a home health care or hospice setting. (**NOCP 8.1.c**)
67. Define hospice care, comfort care, and DNR/DNAR as they relate to local practice, law, and policy. (**NOCP 6.1.m**)
68. List and describe the characteristics of typical home care devices related to airway maintenance, artificial and alveolar ventilation, vascular access, drug administration, and the GI/GU tract. (**NOCP 6.1.m**)
69. Discuss the complications of assessing each of the devices described above.
70. Describe indications, contraindications, and techniques for urinary catheter insertion in the male and female patient in an out-of-hospital setting.
71. Identify failure of GI/GU, ventilatory, vascular access, and drain devices found in the homecare setting.

1. Provide care to a patient experiencing illness or injury primarily involving a terminal illness. (**NOCP 6.1.m**)
2. Explain the approach to a patient presenting with a terminal illness. (**NOCP 6.1.m**)
3. Identify disease processes that contribute to terminal illness. (**NOCP 6.1.m**)
4. Analyze how patient history relates to patient presentation. (**NOCP 6.1.m**)
5. Analyze how age, gender and health status relate to patient presentation. (**NOCP 6.1.m**)
6. Adjust care based on patient presentation. (**NOCP 6.1.m**)
7. Infer a differential diagnosis. (**NOCP 6.1.m**)
8. Integrate the approach, assessment, treatment and transportation of a patient. (**NOCP 6.1.m**)
9. Justify approach, assessment, care and transportation decisions. (**NOCP 6.1.m**)
10. Provide care to each of the below using the following criteria as applicable to the patient situation: (**NOCP 6.1.m**)
    a. Anemia
    b. Bleeding disorders
    c. Leukemia
    d. Lymphomas (Hodgkin's and Non-Hodgkin's)
    e. Multiple cell myeloma
    f. Sickle cell disease
11. Discuss the relationship between local home care treatment protocols/SOPs and local EMS protocols/SOPs.
12. Discuss differences in the ability of individuals to accept and cope with their own impending death.
13. List the stages of the grief process and relate them to an individual in hospice care.
14. Discuss the rights of the terminally ill patient.
15. Summarize the types of home health care available in your area and the services provided.
16. Provide care to a patient experiencing non-urgent medical problem. (**NOCP 6.1.l**)
17. Explain the approach to a patient presenting with a non-urgent medical problem. (**NOCP 6.1.l**)
18. Distinguish between an urgent and non-urgent medical problem. (**NOCP 6.1.l**)
19. Analyze how patient history relates to patient presentation. (**NOCP 6.1.l**)
20. Analyze how age, gender, and health status relate to patient presentation. (**NOCP 6.1.l**)
21. Infer a differential diagnosis and adjust patient care based on presentation (**NOCP 6.1.l**)
22. Explain potential complications of non-urgent medical problems. (**NOCP 6.1.l**)
23. Integrate care based on patient presentation. (**NOCP 6.1.l**)
24. Communicate information to patient regarding care.
25. Integrate the approach, assessment, treatment, and transportation of a patient. (**NOCP 6.1.l**)
26. Justify the approach, assessment, care, and transportation decisions. (**NOCP 6.1.l**)

1. Distinguish between “mentally well”, and the “mentally unwell” patient. (**NOCP 4.3.m**)
2. Define behavior and distinguish among normal behavior, abnormal behavior, and the behavioral emergency. (**NOCP 4.3.m**)
3. Discuss the prevalence of behavioral and psychiatric disorders. (**NOCP 4.3.m**)
4. Discuss the pathophysiology of behavioral and psychiatric disorders. (**NOCP 4.3.m**)
5. Discuss the factors that may alter the behavioral or emotional status of an ill or injured individual. (**NOCP 6.1.p**)
6. Describe the medical legal considerations for management of emotionally disturbed patients.
7. Describe the other behaviors associated with behavioral and psychiatric disorders.
8. Define the following terms: affect, anger, anxiety, confusion, depression ,fear, mental status, open-ended question and posture(**NOCP 4.3.m**)
9. Explain the approach to a patient presenting with psychiatric crisis (**NOCP 6.1.p**)
10. Discuss conditions that may precipitate psychiatric crisis (**NOCP 6.1.p**)
11. Analyze how patient history, age, gender and health status relate to patient presentation (**NOCP 6.1.p**)
12. Infer a differential diagnosis (**NOCP 6.1.p**)
13. Adjust care based on patient presentation (**NOCP 6.1.p**)
14. Integrate the approach, assessment, treatment and transportation of a patient (**NOCP 6.1.p**)
15. Justify approach, assessment, care and transport decisions (**NOCP 6.1.p**)
16. Describe verbal techniques useful in managing the emotionally disturbed patient. (**NOCP 2.4.c**)
17. List the appropriate measures to ensure the safety of the paramedic, the patient, and others.
18. Describe the circumstances when relatives, bystanders, and others should be removed from the scene.
19. Describe techniques to systematically gather information from the disturbed patient.
20. Identify techniques for physical assessment in a patient with behavioral problems. (**NOCP 4.3.m**)
21. Apply assessment techniques specific to psychiatric disorders. (**NOCP 4.3.m**)
22. Evaluate psychiatric assessment findings. (**NOCP 4.3.m**)
23. Demonstrate assessment techniques for psychiatric disorders. (**NOCP 4.3.m**)
24. Adapt assessment techniques to psychiatric history findings. (**NOCP 4.3.m**)
25. Communicate appropriately with other health care providers when dealing with a patient suffering psychiatric disorders. (**NOCP 4.3.m**)
26. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following anxiety disorders: (**NOCP 4.3.m**)
    a. Acute stress disorder
    b. Generalized anxiety disorder
    c. Panic disorder
    d. Post-traumatic stress disorder
    e. Situational disturbances

27. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following childhood psychiatric disorders: (**NOCP 4.3.m**)
    a. Attention deficit disorder
    b. Autistic disorder
28. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following cognitive disorder: (**NOCP 4.3.m**)
    a. Delirium
29. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following eating disorders: (**NOCP 4.3.m**)
    a. Anorexia nervosa
    b. Bulimia
30. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following affective psychiatric disorders: (**NOCP 4.3.m**)
    a. Bipolar disorder
    b. Depressive disorder
    c. Suicide ideation
31. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following psychotic disorders: (**NOCP 4.3.m**)
    a. Anxiety
    b. Depression
    c. Delusional disorder
    d. Homicidal disorder
    e. Schizophrenia
32. Explain the pathophysiology, signs and symptoms, and treatment considerations for the following psychosocial disorder: (**NOCP 4.3.m**)
    a. Antisocial disorder
33. Describe methods of defusing. (**NOCP 3.3.d**)
34. Describe methods of self-protection. (**NOCP 3.3.d**)
35. Choose and adapt methods of defusing appropriate for the situation & self-protection. (**NOCP 3.3.d**)
36. Choose and apply methods of defusing & self-protection appropriate for the situation. (**NOCP 3.3.d**)
37. Apply safety precautions when dealing with patients suffering from psychiatric illness. (**NOCP 3.3.d**)
38. List situations in which you are expected to transport a patient forcibly and against his will.
39. Describe restraint methods necessary in managing the emotionally disturbed patient.

Section 06 CBRNE

1. Identify the five categories of weapons of mass destruction: (**NOCP 8.3.a**)
    a. Biological
    b. Nuclear
    c. Incendiary

    d. Chemical
    e. Explosive
2. List common CBRNE agents and discuss common signs and symptoms that may be present in an exposure: (**NOCP 8.3.a**)
    a. Anthrax
    b. Botulism
    c. Plaque
    d. Ricin
    e. Tularemia
    f. Smallpox
    g. Nerve agents
    h. Poisonous gases
3. Discuss modes of transmission and protective mechanisms (**NOCP 8.3.a, b**)
4. Discuss the principles of scene safety in relation to a CBRNE event (**NOCP 8.3.c**)
5. Describe how to define and establish an inner and outer perimeter of a CBRNE event (**NOCP 8.3.c**)
6. Describe agent/hazard avoidance techniques (**NOCP 8.3.c**)
7. Discuss the importance of PPE and identify the levels of protection PPE (**NOCP 8.3.b**)
8. Discuss the limitations of PPE (**NOCP 8.3.b**)
9. Discuss the use of additional resources in a CBRNE event (**NOCP 8.3.f**)
10. Identify a crime scene and discuss how to preserve it
11. Describe how triage may be adapted to be used in a CBRNE event (**NOCP 8.3.d**)
12. Control contaminated casualties in a CBRNE incident (**NOCP 8.3.d**)
13. Discuss how to assess, evaluate and treat a patient involved in a CBRNE event (**NOCP 8.3.f**)
14. Discuss directed first-aid and describe when its use is appropriate (**NOCP 8.3.f**)
15. Discuss chemical counter-measures
16. Conduct decontamination procedures involved in a CBRNE event (**NOCP 8.3.e**)
17. Assist with the decontamination process in a CBRNE event (**NOCP 8.3.e**)
18. Identify precautions required when transporting patients involved in a CBRNE event (**NOCP 8.3.f**)
19. Identify transport decisions and requirements of receiving hospitals (**NOCP 8.3.f**)
20. Recognize the psychological impact of CBRNE incidents on the community resources and first responders (**NOCP 8.3.f**)

Section 07 Pharmacology

1. For the medications listed below (**NOCP 5.8.a, o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names
    c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
    d. Evaluate medical conditions and indications for a particular route of medication administration

e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
f. Explain mechanism of action
g. Apply proper calculations for correct medication requirement for the patient presentation
h. Distinguish approved drug routes for the medication in question
i. Evaluate appropriate site and route of medication administration
j. Evaluate the benefits and risks of medication administration via various possible routes
    i. Haldol
    ii. Versed
    iii. Valium

2. For the medications listed below (**NOCP 5.8.a, o, Appendix 5**):
    a. Identify the drug classification
    b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
    c. List some common examples of each classification
        i. Amitriptyline
        ii. Citalopram (Celexa)
        iii. Fluoxetine (Prozac)
        iv. Paroxetine (Paxil)
        v. Reserpine
        vi. Stemetil
        vii. Droperidol
        viii. Chlorpromazine

Advanced Care Paramedic
Module 12

Introduction to Other Levels

Module 12 Introduction to Other Levels

With this module the student will become familiar with the expanding roles in paramedicine in Canada and other countries. The student will also be introduced to a number of advanced procedures and treatments being used in the hospital and prehospital setting.

Section	Topic	
1	Advanced Airway Procedures	
2	Patient Monitoring	
3	Data Interpretation	
4	Flight Physiology	
5	Transport Considerations	
6	Other Levels	
7	Pharmacology	

Time Requirements:

Didactic:	Class			
		In Class		36
		Self-Directed Learning		30
			Total	66
Lab:	Practice			42
			In-class Total	108

Reference Materials: Paramedic Textbook
Medical Terminology Textbook
Prehospital Emergency Pharmacology

1. RSI and Facilitated Intubation
    a. Identify the purpose of, indications and contraindications of a Rapid Sequence Induction (RSI), as well as the equipment and pharmacological agents required for the procedure.
    b. Perform a simulated RSI, while adjusting to patient presentation and potential complications.
    c. Discuss the indications and contraindications, as well as the pharmacological agents required for a facilitated intubation and perform a simulated facilitated intubation.
2. Mechanical Ventilation
    a. Define mechanical ventilation. (**NOCP 5.4.b**)
    b. Identify the various types of mechanical ventilation. (**NOCP 5.4.c**)
    c. Describe the four basic functions of a ventilator. (**NOCP 5.4.c**)
    d. Set up mechanical ventilator based on patient presentation.
    e. Discuss the use of a mechanical ventilator based on patient presentation (**NOCP 5.4.d**)
    f. Describe: (**NOCP 5.4.c**)
        i. Compliance
        ii. Resistance
        iii. Plateau pressure
        iv. Inspiratory pressure
        v. Expiratory pressure
        vi. Peak expiratory pressure
        vii. Tidal volume
        viii. Respiratory volume
    g. Discuss potential complications and safety issues associated with mechanical ventilators. (**NOCP 5.4.c**)
    h. Describe: (**NOCP 5.4.c**)
        i. Vent circuit
        ii. End tidal carbon dioxide
        iii. Capnography (**NOCP 5.4.d**)
        iv. Capnometer
        v. Manometer
        vi. Respirometer
    i. Differentiate between intermittent mandatory ventilation, continuous mandatory ventilation, and assist control inverse ratio. (**NOCP 5.4.c**)
    j. Understand and utilize in a controlled setting the following modes of mechanical ventilation: (**NOCP 5.4.c**)
        1. CPAP
        2. BiPAP
        3. PEEP
        4. Pressure Support Ventilation
        5. Continuous Mandatory Ventilation
        6. Volume Assist/ Control
        7. Intermittent Mandatory Ventilation
        8. Synchronized intermittent mandatory ventilation
    k. Describe blender saturated oxygen (**NOCP 5.4.c**).

l. Describe adjustment of parameters to changes in ventilators and hemodynamic status. (**NOCP 5.4.d**)
m. Integrate use of ventilator based on patient presentation. (**NOCP 5.4.c, d**)
n. Describe patient management, stabilization, and monitoring.
o. Evaluate whether patient may benefit from mechanical ventilation. (**NOCP 5.4.b**)
p. Discuss indications for mechanical ventilation. (**NOCP 5.4.a**)
q. Demonstrate use of mechanical ventilator based on patient presentation. (**NOCP 5.4.d**)
r. Adjust parameters to changes in mechanical ventilation based on patient presentation. (**NOCP 5.4.d**)
s. Integrate use of mechanical ventilator based on patient presentation. (**NOCP 5.4.d**)
t. Discuss the use of pulse oximetry **(NOCP 5.4.d)**
u. Describe adjustment of parameters to changes in ventilators and hemodynamic status. (**NOCP 5.4.d**)
v. Integrate the use of pressure support, pressure control, manometry, respirometry, and arterial blood gas analyze.
w. Describe patient management, stabilization, and monitoring.
x. Troubleshoot basic problems involving ventilator alarms

3. Pulse Oximetry and Capnography
    a. Identify what a pulse oximeter measures and explain the physiologic properties of oxygen. (**NOCP 4.5.a**)
    b. Explain the physiologic properties of oxygen (**NOCP 4.5.a**)
    c. Describe the function of a pulse oximeter (**NOCP 4.5.a**)
    d. Explain factors that affect accuracy of pulse oximeters. (**NOCP 4.5.a**)
    e. Identify four situations where pulse oximeter use may provide a faulty reading. (**NOCP 4.5.a**)
    f. Evaluate oximetry waveforms. (**NOCP 4.5.a**)
    g. Infer indications for oxygen administration relative to saturated oxygen values. (**NOCP 4.5.a**)
    h. Perform oximetry testing and adapt technique to patient age in a simulated setting.
    i. Differentiate between various end tidal carbon dioxide monitoring methods. (**NOCP 4.5.b**)
    j. Explain factors which may limit the reliability of end tidal carbon dioxide values. (**NOCP 4.5.b**)
    k. Explain the relationship of end tidal carbon dioxide to arterial blood gas measurement of partial pressure of arterial carbon dioxide. (**NOCP 4.5.b**)
    l. Differentiate between sidesstream, microstream and mainstream end-tidal carbon dioxide. (**NOCP 4.5.b**)
    m. Describe capnographic waveforms. (**NOCP 4.5.b**)
    n. Integrate use of capnography and pulse oximetry. (**NOCP 5.4.d**)

Section 02 Patient Monitoring

1. Arterial line
    a. Identify indications for performing radial artery puncture or collecting blood samples via arterial line access. (**NOCP 4.5 e, f**)
    b. Describe specific physical assessments to be performed prior to radial artery puncture. (**NOCP 4.5.e**)

c. Describe arterial blood specimen collection from an arterial line. (**NOCP 4.5.f**)

2. Blood gas interpretation
    a. Explain indications and rationale for obtaining and interpreting blood gas information
    b. Describe the values that can be obtained with blood gases (**NOCP 4.5.l**)
        i. pH
        ii. pO_2
        iii. pCO_2
        iv. HCO^{3-}
        v. Base Excess
        vi. SaO_2
        vii. Anion Gap
    c. Identify the normal ranges of the values (**NOCP 4.5.l**)
    d. Interpret patient status given examples of blood gas values (**NOCP 4.5.l**)
3. Central venous access (**NOCP 4.5.i, j**)
    a. Define central venous pressure & central venous catheterization (**NOCP 4.5.i, NOCP 4.5.j**)
    b. Identify normal central venous pressures (**NOCP 4.5.i**)
    c. Explain the indications and rationale for central venous pressure monitoring (**NOCP 4.5.i**)
    d. Identify the types of central venous access **(NOCP 4.5.j)**
        i. Implanted Port (VAD)
        ii. PICC Line
    e. Discuss indications and rationale for obtaining central venous access (**NOCP 4.5.j**)
    f. Describe the proper procedure for conducting central venous catheterization, as well as the associated hazards and complications (**NOCP 4.5.j**)
4. Arterial line monitoring
    a. Define pulmonary artery catheter monitoring (**NOCP 4.5.h**)
    b. Identify the normal pulmonary artery catheter values (**NOCP 4.5.h**)
    c. Explain the rationale and indications for the use of pulmonary artery catheters (**NOCP 4.5.h**)
    d. Explain the assessment and management of pulmonary catheters (**NOCP 4.5.h**)
    e. Define arterial pressure (**NOCP 4.5.k**)
    f. Identify the normal arterial pressure values (**NOCP 4.5.k**)
    g. Explain the rationale and indications for arterial pressure monitoring (**NOCP 4.5.k**)

Section 03 Data Interpretation

1. Explain the relevance of common radiological data and laboratory tests (**NOCP 4.5.l, o - q**)
2. Describe implications of abnormal laboratory results **(NOCP 4.5.l)**
3. Differentiate between normal and abnormal lab results. (**NOCP 4.5.l**)
    a. Gain a knowledge and understanding of basic lab values
    b. Utilize values within the chart to make a care plan for transit
    c. Review Blood Gas interpretation and application
    d. Identify and analyze examples of common laboratory data including:
        i. Hematology
            1. CBC
                a. RBC
                    i. Hemoglobin
                    ii. Hematocrit

iii. Red blood cell number
iv. MCV, MCH, MCHC
v. RDW
vi. Reticulocyte count

b. WBC
i. PMNs/Segs
ii. Neutrophil Count
iii. Bands
iv. Eosinophils
v. Basophils
vi. Lymphocytes
vii. Monocytes

c. Platelet Count

2. Erythrocyte Sedimentation Rate
3. Coagulation Tests
a. PT/PTT/INR
b. D-Dimer

ii. Chemistry
1. Electrolytes
2. Renal function tests
3. Liver function tests
4. Glucose metabolism
5. Lipid metabolism
6. Cardiac enzymes and markers

iii. Microbiology
iv. Serology
v. Toxic Screen (Blood)
vi. Toxic Screen (Urine) (**NOCP 4.5.l**)

4. X-Ray (**NOCP 4.5.o**)
a. Explain common radiological data (**NOCP 4.5.o**)
b. Differentiate normal from abnormal radiological data (**NOCP 4.5.o**)
c. Describe implications of abnormal radiological data (**NOCP 4.5.o**)
d. Understand the basics of chest and c-spine x-rays
e. Understand the relevance to patient condition
f. Identify basic abnormalities including Effusion, Pneumothorax, Hemothorax and CHF.
5. CT, Ultrasound and MRI (**NOCP 4.5.p**)
a. Describe common findings (**NOCP 4.5.p**)
6. Urinalysis (**NOCP 4.5.q**)
a. Discuss the indications and rationale for performing macroscopic urinalysis **(NOCP 4.5.Q)**
b. Describe common assessments associated with urinalysis by qualitative method **(NOCP 4.5.q)**
c. Obtain sample using appropriate techniques **(NOCP 4.5.q)**
d. Demonstrate urinalysis by macroscopic method **(NOCP 4.5.q)**
e. Interpret findings associated with urinalysis **(NOCP 4.5.q)**

1. Differentiate between air medical scene response, interfacility transport, and repatriation transports. (**NOCP 7.4.a**)
2. Identify the core components of any air medical transport. (**NOCP 7.4.a**)
3. Identify the unique components of air medical scene response transport including crew, patient, and equipment preparation. (**NOCP 7.4.a**)
4. Identify the unique components of air medical interfacility transport. (**NOCP 7.4.a**)
5. Identify the unique components of air medical repatriation transports. (**NOCP 7.4.a**)
6. Describe pre-flight safety measures. (**NOCP 7.4.a**)
7. Describe basic in flight safety measures and five in flight emergencies and emergency actions.
8. List general emergency communication and survival activities.
9. List the required elements of a safe landing zone. (**NOCP 7.3.a**)
10. Describe the procedure to create a safe landing zone. (**NOCP 7.3.a**)
11. Describe the technique for safely approaching a rotary wing aircraft. (**NOCP 7.3.b**)
12. Describe the technique for safely approaching a fixed wing aircraft. (**NOCP 7.3.c**)
13. Identify the unique patient care principles for air medical transport. (**NOCP 7.4.a**)
14. Describe the preparation of a patient for air medical transport. (**NOCP 7.4.a**)
15. List the environmental factors and stresses experienced in flight. (**NOCP 7.4.b**)
16. Describe how environmental factors and stresses may affect air medical patients. (**NOCP 7.4.b**)
17. Modify techniques of care during flight. (**NOCP 7.4.b**)

Section 05 Transport Considerations

1. Identify patients who require advanced levels of care in transit.
2. Understand changes that have occurred between the deliveries of pre-hospital care to the post hospital care transportation.
3. Describe the steps of an interfacility transport.
4. Describe the role of the sending physician and institution.
5. Describe the role of On-Line Medical Control in the interfacility transportation.
6. Integrate knowledge of the patients in-hospital needs to formulate a care plan.
7. Understand the importance of preplanning and preparation for the continued care of the critical patient.
8. Identify professional resources available to create a multidisciplinary care team.
9. Identify the benefits of air vs. ground transport.
10. Understand the role of the ACP in dealing with additional medications in transit. (Scope vs. standing order)
11. Acknowledge the out of hospital risk taken in the delivery of an emergent transfer.
12. Thoracostomy Transport (**NOCP 5.5.r**)
    a. Define Tube Thoracostomy
    b. Know the indications and contraindications for the procedure
    c. Understand how a water seal works
    d. Understand a commercial device such as the pleuro-vac
    e. Understand the role of an ACP in monitoring a chest tube and seal during transport
    f. Understand how to prepare a patient with a chest tube for transit including analgesia
    g. Know the basic complications associated with a chest tube.
        i. Air leak
        ii. Clogged drainage tube

iii. Dislodged chest tube
iv. Cracked/ broken water seal
v. Increased SOB/Pain
vi. Increased Drainage

h. Be able to troubleshoot problems between the site of insertion up to and including the water seal system
i. Understand the role of a Heimlich Valve
j. Be able to apply a Heimlich valve
k. Review Needle Thoracostomy

13. Blood Product Transport (**NOCP 5.5.h**)
    a. Review Blood Type and rh factors
    b. Understand the concept between universal donor and universal recipient
    c. Understand the Indications and Contraindications for Blood product administration
    d. Understand the types of Blood Products available and their use
    e. Understand the Advanced Care Paramedics role in Blood Product Administration
    f. Know and apply the procedure for blood and blood product administration
    g. Identify the need and reasons for intense monitoring of these patients
    h. Demonstrate a knowledge the precautions used in handling blood products and the complications of Blood and Blood Product administration including: (**NOCP 5.5.h**)
        i. Hemolytic
        ii. Febrile (non-hemolytic)
        iii. Allergic
        iv. Anaphylactic
        v. Sepsis
        vi. Circulatory Overload
        vii. Pulmonary Embolus
        viii. Massive Transfusion Reactions
            1. Hypothermia
            2. Coagulopathies
            3. Electrolytes
            4. ARDS
    i. Understand the importance of protocol with Blood and Blood Product administration

Section 06 Other Levels

1. Discussion different expanding models of paramedicine to include:
    a. Community Paramedicine
    b. Extended Care Paramedicine
    c. Departmental Paramedic
2. Discuss the advantages and disadvantages of the different models

Section 07 Pharmacology

13. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify drug classification
    b. Identify chemical, generic, trade, and official names

c. Discuss indications, relative and absolute contraindications, side effects, dosage parameters, and safe administration processes
d. Evaluate medical conditions and indications for a particular route of medication administration
e. Explain factors that may affect absorption, distribution, metabolism, and elimination of a medication
f. Explain mechanism of action
g. Apply proper calculations for correct medication requirement for the patient presentation
h. Distinguish approved drug routes for the medication in question
i. Evaluate appropriate site and route of medication administration
j. Evaluate the benefits and risks of medication administration via various possible routes
    i. Midazolam
    ii. Atropine
    iii. Lidocaine
    iv. Morphine
    v. Fentanyl
    vi. Oxygen

14. For the medications listed below (**NOCP 5.8.o, Appendix 5**):
    a. Identify the drug classification
    b. Explain the mechanism of action of the drug and how it relates to their usage in the management of cardiovascular disease and injury
    c. List some common examples of each classification
        i. Pancuronium
        ii. Rocuronium
        iii. Succinylcholine
        iv. Vecuronium
        v. Etomidate
        vi. Ketamine
        vii. Propofol
        viii. Sodium thiopental
        ix. Neostigmine

Advanced Care Paramedic

Module 13

Short Program Outlines

Module 13 Short Program Outlines

This module outlines all of the short program materials delivered to the paramedic student during this program. The program outlines identify the key points covered in the program and may or may not already be included elsewhere in the Advanced Care Paramedic Program Profile.

Section	Topic	
1	Medical Terminology	
2	Airway Intervention and Management in Emergencies (AIME)	
3	Advanced Cardiac Life Support (ACLS)	
4	Pediatric Advanced Life Support (PALS)	
5	Geriatric Education for Emergency Medical Services (GEMS)	
6	Pediatric Education for Prehospital Professionals (PEPP)	
7	Workplace Hazardous Materials Information System (WHMIS)	
8	Canadian Triage and Acuity Scale Program (CTAS)	
9	Cardio-Pulmonary Resuscitation (Health Care Provider) (BLS)	
10	Harassment Workshop	
11	Incident Command System – 100 (ICS-100)	
12	Paramedic Evidence Based Practice (PEBP)	

Time Requirements:

Didactic:	Class		
		In Class	0
		Self-Directed Learning	32
		Total	32
Lab:	Practice		0
		In-class Total	32

Note: This is a self-directed short course; the short course hours are counted in the hours listed in Module 01.

Reference Materials: Medical Terminology Textbook
Paramedic Textbook
Learning Management System Online Resources
Pearson MyLab Medical Terminology Online Resources

1. Introduction to Word Parts and Human Body Structure
2. Identify and define the four word parts
3. Identify and define a combining form
4. Integrate medical and non medical terminology into practice. **(NCOP 2.1.g)**
5. Interpret the meaning of common medical symbols and abbreviations (**NOCP 2.1.g**)
6. Define terms used to describe medical specialties. (**NOCP 2.1.g**)
7. List common items of professional correspondence. (**NOCP 2.2.b**)
8. Describe essential elements of professional correspondence **(NOCP 2.2.b)**
9. Identify anatomical structures of the human body. (**NOCP 2.1.g**)
10. Define common medical terminology and spell the word parts, build and analyze medical terms using the word parts related to:
    a. Body structure, colour and oncology. (**NOCP 2.1.g**)
    b. Directional terms (**NOCP 2.1.g**)
    c. Anatomical planes, regions and quadrants (**NOCP 2.1.g**)
11. Body Systems (**NOCP 2.1.g**)
    a. Identify the organs and structures of the system
    b. Define and spell the word parts
    c. Build and analyze medical terms using the word parts
    d. Define pronounce and spell disease and disorder, procedural, surgical and complementary terms for the system
12. Systems (**NOCP 2.1.g**)
    a. Integumentary System
    b. Respiratory System
    c. Urinary System
    d. Male Reproductive System

e. Female Reproductive System
f. Obstetrics and Neonatology System
g. Cardiovascular and Lymphatic System
h. Digestive System
i. Eye
j. Ear
k. Musculoskeletal System
l. Nervous System and Common Psychiatric Terms
m. Endocrine System

Section 02 Airway Intervention and Management in Emergencies (AIME)

Time Requirements:

Didactic:	Class		
		In Class	6
		Self-Directed Learning	0
		Total	6
Lab:	Practice		6
		In-class Total	12

Reference Materials: Airway Management in Emergencies
Paramedic Textbook

1. Be more confident and comfortable in making acute care airway management decisions.
2. Have acquired a practical staged approach to airway management.
3. Be able to choose the most appropriate method of airway management based on a variety of patient presentations.
4. Make appropriate choices in the use of pharmacologic agents used to facilitate airway management.
5. Know when and how to use various tools and adjuncts for managing the difficult airway.

Time Requirements:

Didactic:	Class		
		In Class	6
		Self-Directed Learning	0
		Total	6
Lab:	Practice		6
		In-class Total	12

Reference Materials: Paramedic Textbook
Advanced Cardiac Life Support Manual

1. Recognize and initiate early management of pre-arrest conditions that may result in cardiac arrest or complicate resuscitation outcome. (**NOCP 4.3.c, 6.3.a, b**)
2. Demonstrate proficiency in providing BLS care, including prioritizing chest compressions and integrating automated external defibrillator use (**NOCP 5.5.a, l, j**)
3. Describe the critical actions of the BLS Survey and the ACLS Survey
4. Describe assessment and management that occur with each step of the systematic approach. (**NOCP 6.1.a, 6.3.a, b**)
5. Describe how the assessment/management approach is applicable to most cardio-pulmonary emergencies (**NOCP 6.1.a**)
6. Recognize and manage respiratory arrest (**NOCP 6.1.c**)
7. Recognize and manage cardiac arrest until termination of resuscitation or transfer of care, including immediate post-cardiac arrest care (**NOCP 6.1.a, 6.3.a, b**)
8. Recognize and initiate early management of ACS, including appropriate disposition (**NOCP 6.1.a**)
9. Recognize and initiate early management of stroke, including appropriate disposition (**NOCP 6.1.b**)
10. Remonstrate effective communication as a member or leader of a resuscitation team and recognize the impact of team dynamics on overall team performance (**NOCP 6.3.a**)

Time Requirements:

Didactic:	Class		
		In Class	6
		Self-Directed Learning	0
		Total	6
Lab:	Practice		6
		In-class Total	12

Reference Materials: Paramedic Textbook
Pediatric Advanced Life Support Manual

1. Describe the timely recognition and interventions required to prevent respiratory and cardiac arrest in any pediatric patient
2. Describe the systematic approach to pediatric assessment by using the initial impression, primary and secondary assessments, and diagnostic tests (**NOCP 4.3.n**)
3. Describe priorities and specific interventions for infants and children with respiratory and/or circulatory emergencies
4. Explain the importance of effective team dynamics, including individual roles and responsibilities, during a pediatric resuscitation (**NOCP 6.3.a, b**)
5. Describe the key elements of post-resuscitation management

Section 05 Geriatric Education for Emergency Medical Services (GEMS)

Time Requirements:

Didactic:	Class		
		In Class	8
		Self-Directed Learning	13
		Total	21
Lab:	Practice		6
		In-class Total	27

Reference Materials: Paramedic Textbook
GEMS Manual

1. Define the "geriatric" patient (**NOCP 6.2.c**)
2. Discuss aging in society today, including demographic trends
3. Discuss geriatrics, gerontology, and the historical view of aging
4. Discuss the social aspects of aging
5. Describe the aging process and its effect on the body. (**NOCP 6.2.c**)
6. Describe the normal assessment findings in a geriatric patient. (**NOCP 6.2.c**)
7. Discuss verbal and nonverbal communication techniques, communication challenges, when talking to a geriatric patient (**NOCP 2.1.f, g, 2.3.a, b, c**)
8. Discuss the ethical and moral issues related to end-of-life care (**NOCP 1.1.j**)
9. Perform assessment of the geriatric patient using a systematic approach (**NOCP 6.2.c**)
10. Modify typical assessment approach as necessary for a geriatric patient. (**NOCP 6.2.c**)
11. Discuss possible abuse or neglect of the geriatric patient. (**NOCP 1.7.b, 6.2.c**)
12. Discuss improving quality of life

Section 06 Pediatric Education for Prehospital Professionals (PEPP)

Time Requirements:

Didactic:	Class		
		In Class	8
		Self-Directed Learning	13
		Total	21
Lab:	Practice		6
		In-class Total	27

Reference Materials: Paramedic Textbook
PEPP Manual

1. Define "pediatric patient" (**NOCP 6.2.b**)
2. Identify developmental parameters for specific age groups. (**NOCP 6.2.b**)
3. Explain anatomical and physiological differences between the pediatric and adult patient. (**NOCP 6.2.b**)
4. Discuss the special challenges for the prehospital professional in pediatric assessment (**NOCP 6.2.b**)
5. Differentiate the three elements of the Pediatric Assessment Triangle, or the general assessment.
6. Identify and define a child's primary emotional response to interactions with EMS practitioners.
7. Discuss additional assessment techniques specific to the developmental milestones for pediatric patients.
8. Discuss the communication challenges in handling emotional responses of a family with a child who is ill or injured (**NOCP 1.1.b, d, j, 2.1.e, f, 2.3.a b**)
9. Modify assessment approach based on the developmental state of the pediatric patient (**NOCP 6.2.b**)
10. List the expected changes in vital signs with advancing age
11. Describe the key growth and development characteristics for each of the following groups: (**NOCP 4.3.l, n, 6.2.a, b**)
    a. Infants
    b. Toddlers
    c. Preschoolers
    d. School-aged children
    e. Adolescents
    f. Special needs
12. Explain unique anatomic and physiologic characteristics that influence assessment of children in each age group

13. Identify the anatomical or physiologic differences between children and adults for each of the following areas:
    a. Skin and body surface
    b. Head
    c. Airway
    d. Chest and lungs
    e. Heart and circulation
    f. Abdomen
    g. Extremities
    h. Nervous system
14. Identify signs associated with common pediatric emergencies. (**NOCP 4.3.n**)
15. Review pediatric basic life support.
16. Utilize the Braslow Tape in the management of the pediatric patient.
17. Explain common signs and symptoms associated with pediatric emergencies. (**NOCP 6.2.b**)
18. Explain common pediatric medical emergencies. (**NOCP 6.2.b**)
19. Discuss common pediatric trauma emergencies. (**NOCP 6.2.b**)
20. Perform appropriate assessment techniques for the pediatric patient. (**NOCP 6.2.b**)
21. Integrate the approach, assessment, treatment, and transportation of the pediatric patient. (**NOCP 6.2.b**)
22. Communicate information regarding care to a patient, parents, or primary care giver. (**NOCP 2.1.d, 6.2.b**)
23. Justify approach, care, and transportation decisions. (**NOCP 6.2.b**)
24. Identify possible abuse or neglect of the pediatric patient. (**NOCP 1.7.b, 6.2.b**)

Section 07 Workplace Hazardous Materials Information System (WHMIS)

Time Requirements:

Didactic:	Class		
		In Class	0
		Self-Directed Learning	3
		Total	3
Lab:	Practice		0
		In-class Total	3

Note: This short course is delivered during Module 1; the short course hours are already counted in the hours listed in Module 1.

Reference Materials: WHMIS Student Reference
Paramedic Textbook

1. Outline the responsibility of the employer and employee for safety.
2. List the three levels of legislation involved in safety, and state which are responsible for: (**NOCP 3.3.e**)
    a. WHMIS
    b. Fire
    c. Waste disposal
3. List the essential components of personal safety with examples of how each contributes to a safe work environment.
4. List the three components of WHMIS.
5. State who is responsible for providing MSDS and, give an overview of the type of information contained, and state how MSDS is used in the workplace.
6. Differentiate between a supplier label and a workplace label.
7. List the three requirements of the workplace label.
8. Describe the employer and employee responsibility for WHMIS education.
9. Identify the following WHMIS symbols:
    a. Compressed gas
    b. Flammable and combustible
    c. Oxidizing material
    d. Poisonous and infectious material
    e. Immediate and serious toxic effects
    f. Other toxic effects
    g. Biohazardous infectious material
    h. Corrosive material
    i. Dangerously reactive material

10. Identify and explain personal protection symbols.
11. State the jurisdiction responsible for the use, storage and shipping of radioactive material.
12. Name the regulations governing the transportation of dangerous goods and state who in a health care facility needs be familiar with them.
13. Describe applicable WHMIS legislation, as well as regulations **(NOCP 3.3.e)**
14. Apply WHMIS regulations **(NOCP 3.3.e)**

Section 08 Canadian Triage and Acuity Scale Program (CTAS)

Time Requirements:

Didactic:	Class		
		In Class	6
		Self-Directed Learning	0
		Total	6
Lab:	Practice		0
		In-class Total	6

Note: These hours are included in Module 02

Reference Materials: The Canadian Triage and Acuity Scale Participants Manual
Power point presentation
Paramedic Textbook

1. Describe the historical basis of triage.
2. Define the purpose and value of triage.
3. Review the unique nature of emergency patients.
4. Describe the professional role and personal characteristics of the triage nurse.
5. Demonstrate an understanding of the nursing skills applied in triage including public relations, interviewing, documentation, critical thinking and communications.
6. Describe the full triage process from patient arrival to transfer to a treatment area.
7. Rapidly identify patients with a high acuity level.
8. Care for patients in the waiting room.
9. Define the meaning of the five CTAS levels.
10. Apply the CEDIS list of presenting complaints.
11. Accurately apply first and second order modifiers to presenting complaints.
12. Describe appropriate reassessment times.
13. Review case scenarios and discuss CTAS decision.
14. Describe the challenges of CTAS implementation in rural hospitals.
15. Understand the differences between pediatric and adult triage.
16. Apply the Critical Look: Pediatric Assessment Triangle.
17. Interpret vital signs in pediatric patients.
18. Identify presenting complaint and utilize the CIAMPEDS.
19. Apply pediatric specific modifiers.
20. Analyze case scenarios.
21. Understand how CEDIS applies to the pediatric presenting complaints.

Section 9 Cardio-Pulmonary Resuscitation (BLS)

Time Requirements:

Didactic:	Class		
		In Class	2
		Self-Directed Learning	0
		Total	2
Lab:	Practice		4
		In-class Total	6

Note: These hours are included in the profile under Module 10 and do not need to be added to the schedule.

Reference Materials: Heart and Stroke BLS-CPR Student Reference
Paramedic Textbook

1. Take measures to prevent choking.
2. Recognize choking.
3. Provide first aid for an adult choking casualty.
4. Provide ongoing casualty care and hand over for a casualty whose airway has been cleared.
5. Apply the knowledge of cardiovascular disease.
6. Apply the knowledge of risk factors of cardiovascular disease.
7. Apply the knowledge of preventative health measures.
8. Apply the principles of first aid for cardiovascular emergencies.
9. Recognize angina/heart attack and provide first aid.
10. Recognize cardiac arrest. **(NOCP 5.5.a)**
11. Perform one-rescuer CPR on an adult casualty. **(NOCP 5.5.a)**
12. Recognize stroke/TIA and provide first aid.
13. Take measures to prevent breathing emergencies in children.
14. Provide first aid for a choking child.
15. Perform one-rescuer CPR on a child**. (NOCP 5.5.a)**
16. Take measures to prevent breathing emergencies in infants
17. Provide first aid for a choking infant.
18. Perform one-rescuer CPR on an infant. **(NOCP 5.5.a)**
19. Perform two rescuers CPR on an adult casualty. **(NOCP 5.5.a)**
20. Describe the conductive system of the heart.
21. Describe the electrical and mechanical activity.
22. Describe the principles of defibrillation.
23. Determine when and when not to use an AED.
24. Describe the functions of an AED.
25. Describe and demonstrate how to safely use an AED.
26. Describe and demonstrate what to do in special circumstances.

27. Handover the casualty to medical help.
28. Apply basic knowledge of the respiratory system.
29. Perform mouth-to-mouth artificial respiration (AR) on an adult casualty.
30. Perform mouth-to-mouth (AR) on an adult casualty with suspended head/spinal injuries.
31. Perform mouth-to-mouth (AR) on a child.
32. Perform mouth-to-mouth (AR) on an infant.
33. Explain how use a pocket mask and bag-valve-mask device (with or without supplement oxygen).
34. Perform effective rescue breathing with pocket mask and bag-valve-mask device (with or without supplement oxygen).
35. Perform one and two rescuer CPR on adult, child and infant casualties in unwitnessed or 189ehavior arrest. **(NOCP 5.5.a)**
36. Perform one and two rescuer CPR on adult, child and infant casualties in witnessed arrest. **(NOCP 5.5.a)**
37. Perform automated external defibrillation on an adult and child casualty.
38. Discuss complications of CPR. **(NOCP 5.5.a)**
39. Perform CPR while moving a patient from site of collapse. **(NOCP 5.5.a)**
40. Adapt to changes in patient presentation. **(NOCP 5.5.a)**

Time Requirements:

Didactic:	Class		
		In Class	3
		Self-Directed Learning	0
		Total	3
Lab:	Practice		0
		In-class Total	3

Note: This short course is delivered during Module 1; the short course hours are already counted in the hours listed in Module 1.

Reference Materials: Medavie Health Ed Policy and Procedures Manual
Nova Scotia Human Rights Act
Canadian Human Rights Act

1. Provide participants with an overview of applicable human rights legislation with specific focus on the harassment provisions.
2. Review prohibited grounds of discrimination and harassment provisions of the Nova Scotia Human Rights Act.
3. Sensitize members and employees as to what constitutes acceptable and unacceptable 190ehavior and the adverse impact that disrespectful 190ehavior or harassment has on employees, members and on the organization as a whole.
4. Identify what is meant by harassment
5. Examine the rights and obligations of members and employees to work in a mutually respectful environment.
6. Ensure participants understand that they play a critical and definitive role in creating and maintaining an organizational environment which is characterized by mutual respect and appreciation for the rights and sensibilities of others.
7. Review schools policy on harassment.

Time Requirements:

Didactic:	Class		
		In Class	0
		Self-Directed Learning	3
		Total	3
Lab:	Practice		0
		In-class Total	3

Note: This short course is delivered during Module 8; the short course hours are already counted in the hours listed in Module 8.

Reference Materials: ICS-100 Online Reference Material
Paramedic Textbook

1. Provide participants with an overview of the Incident Command System.
2. Review the history, features and principles, and organizational structure of the Incident Command System.
3. Review the purpose of ICS: the requirements and purpose to use ICS and common incident tasks.
4. Understand the Incident Commander and Command Staff Functions: roles and functions of the Incident Commander and Command Staff.
5. Understand the general staff functions: roles and functions of the Operations, Planning, Logistics and Finance/Administration sections.
6. Understand the facilities: basic ICS facilities, their use and location, and facility map symbols.
7. Review the common responsibilities: common mobilization responsibilities and common responsibilities at an incident, individual accountability responsibilities, and common demobilization responsibilities.

Section 12 Prehospital Evidence Based Practice (PEBP)

Time Requirements:

Didactic:	Class		
		In Class	6
		Self-Directed Learning	3
		Total	9
Lab:	Practice		0
		In-class Total	9

Note: This short course is delivered during Module 1; the short course hours are already counted in the hours listed in Module 1.

Reference Materials: Prehospital Evidence-Based Practice online material
Paramedic Textbook
Internet

1. Identify sources of research evidence and statistics (**NOCP 1.2.c**)
2. Describe the process of conducting a literature search. (**NOCP 1.2.c**)
3. Explain the importance of research as it applies specifically to the field of EMS and as well to health care in general. (**NOCP 1.2.c**)
4. Understand the importance of research applicability. (**NOCP 1.2.c**)
5. Evaluate research evidence. (**NOCP 1.2.c**)
6. Explain the importance of research in Emergency Medical Services (**NOCP 1.2.c**)
7. Define academic and clinical research. (**NOCP 1.2.c**)
8. Describe Quantitative research methodology. (**NOCP 1.2.c**)
9. Describe Qualitative research methodology. (**NOCP 1.2.c**)
10. Recognize when each style might be applicable. (**NOCP 1.2.c**)
11. Discuss ethical considerations in research. (**NOCP 1.2.c**)
12. Define Evidence Based Practice (**NOCP 1.2.c**)
13. Describe limitations and benefits with evidence-based practice. (**NOCP 1.2.c**)
14. Describe how to develop a research question. (**NOCP 1.2.c**)
15. Using the PICO format form a research question. (**NOCP 1.2.c**)
16. Identify sources of research, access and evaluation. (**NOCP 1.2.c**)
17. Discuss levels of evidence. (**NOCP 1.2.c**)
18. Given a specific topic, review literature and analyze the information obtained. (**NOCP 1.2.c**)
19. Apply research findings to personal practice. (**NOCP 1.2.c**)
20. Define ethics and ethical behavior. (**NOCP 1.1.i**)
21. Describe the role of ethics in professional practice. (**NOCP 1.1.i**)
22. Define the role of ethics in clinical and academic research. (**NOCP 1.1.i**)
23. Write a research question. (**NOCP 1.2.c**)

24. Conduct basic literature review. (**NOCP 1.2.c**)
25. Be able to analyze research evidence. (**NOCP 1.2.c**)
26. Discuss levels of evidence and its relevance. (**NOCP 1.2.c**)
27. Conduct a critical appraisal of a research question.
28. Explain the role of knowledge transfer.
29. Discuss applicability of research findings to practice. (**NOCP 1.2.c**)

Advanced Care Paramedic

Module 14

Clinical and Ambulance Practicum

Module 14 Clinical and Ambulance Practicum

This module outlines all of the clinical practicum, as well as the ambulance practicum, competencies a student must attain during the program. The clinical and ambulance practicum experience encompasses a variety of locations in the health care field. The health care locations both hospital and ambulance based offer an opportunity for the student to participate in patient evaluation and care in an emergent and non-emergent setting. Students participating in the ACP program are required to complete the clinical and practicum hours on assigned clinical days and/or weekends as scheduled by Medavie HealthEd.

It is important to note it is mandatory for a student to attain all "C" and "P" competencies identified in the National Occupational Competency Profile for Paramedicine as developed by the Paramedic Association of Canada. These competencies are identified in this module all "C" competencies are listed under clinical practicum, while all "P" competencies are listed under ambulance practicum.

Section	Topic	
1	Clinical Experience	
2	Ambulance Practicum	

Time Requirements:

Clinical Experience (ER)	108
Clinical Experience (OR)	24
Clinical Experience (ICU/CCU)	36
Clinical Experience (Lab Del)	24
Ambulance Practicum	504
Total	696

Reference Materials: Paramedic Textbook
Great Big Solutions Comptracker Software
Internet
Pre-hospital Emergency Pharmacology
Geriatric Education for Emergency Medical Services
Pediatric Education for Pre-hospital Professionals
Preceptorship Manual

Evaluations:

1. Successfully completion of all competencies required in the clinical and practicum settings with an acceptable evaluation from the preceptor
2. 100% Completion of all clinical and practicum hours (Note: the listed hours are a minimum requirement and the student may be scheduled excess clinical and practicum time to ensure the minimum standards are achieved)

Section 01 Clinical Practicum

1. Conduct obstetrical assessment and interpret findings **(NOCP 4.3.f)**
2. Conduct neonatal assessment and interpret findings **(NOCP 4.3.l)**
3. Conduct pediatric assessment and interpret findings **(NOCP 4.3.n)**
4. Conduct non-invasive temperature monitoring **(NOCP 4.4.c)**
5. Measure blood pressure with non-invasive blood pressure monitor **(NOCP 4.4.f)**
6. Conduct oximetry testing and interpret findings **(NOCP 4.5.a)**
7. Conduct end-tidal carbon dioxide monitoring and interpret findings **(NOCP 4.5.b)**
8. Use manual maneuvers and positioning to maintain airway patency **(NOCP 5.1.a)**
9. Suction oropharynx **(NOCP 5.1.b)**
10. Suction beyond oropharynx **(NOCP 5.1.c)**
11. Utilize airway devices requiring visualization of vocal cords and introduced endotracheally **(NOCP 5.1.h)**
12. Administer oxygen using nasal cannula **(NOCP 5.3.a)**
13. Administer oxygen using high concentration mask **(NOCP 5.3.d)**
14. Provide oxygenation and ventilation using manual positive pressure devices (NOCP 5.4.a)
15. Provide routine care for patient with urinary catheter **(NOCP 5.5.o)**
16. Administer medication via intramuscular route (NOCP 5.8.d)
17. Administer medication via sublingual route **(NOCP 5.8.h)**
18. Administer medication via buccal route **(NOCP 5.8.i)**
19. Administer medication via oral route **(NOCP 5.8.k)**
20. Administer medication via inhalation route **(NOCP 5.8.m)**
21. Provide care to obstetrical patient **(NOCP 6.1.q)**
22. Provide care for neonatal patient **(NOCP 6.2.a)**
23. Provide care for pediatric patient **(NOCP 6.2.b)**
24. Provide care for geriatric patient **(NOCP 6.2.c)**

Section 02 Ambulance Practicum

1. Maintain patient dignity **(NOCP 1.1.a)**
2. Reflect professionalism through use of appropriate language **(NOCP 1.1.b)**
3. Dress appropriately and maintain personal hygiene **(NOCP 1.1.c)**
4. Maintain appropriate personal interactions with patients **(NOCP 1.1.d)**
5. Maintain patient confidentiality **(NOCP 1.1.e)**
6. Behave ethically **(NOCP1.1.i)**
7. Function as patient advocate **(NOCP 1.1.j)**
8. Comply with scope of practice **(NOCP 1.3 a)**
9. Include all pertinent and required information on reports and medical records **(NOCP 1.3 c)**
10. Function within relevant legislation, policies and procedures **(NOCP 1.4.a)**
11. Work collaboratively with a partner **(NOCP 1.5 a)**

12. Accept and deliver constructive feedback **(NOCP 1.5.b)**
13. Employ reasonable and prudent judgment **(NOCP 1.6.a)**
14. Practice effective problem solving **(NOCP 1.6.b)**
15. Delegate tasks appropriately **(NOCP 1.6.c)**
16. Deliver an organized, accurate and relevant verbal report **(NOCP 2.1.b**)
17. Deliver an organized, accurate and relevant patient history **(NOCP 2.1.c)**
18. Provide information to patient about their situation and how they will be cared for **(NOCP 2.1.d)**
19. Interact effectively with the patient, relatives and bystanders who are in stressful situations **(NOCP 2.1.e)**
20. Speak in a language appropriate to the listener **(NOCP 2.1.f)**
21. Use appropriate terminology **(NOCP 2.1.g)**
22. Record organized, accurate and relevant patient information **(NOCP 2.2.a)**
23. Practice active listening techniques **(NOCP 2.3.b)**
24. Establish trust and rapport with patients and colleagues **(NOCP 2.3.c)**
25. Recognize and react appropriately to nonverbal behaviors (NOCP 2.3.d)
26. Treat others with respect **(NOCP 2.4.a)**
27. Employ empathy and compassion while providing care **(NOCP 2.4.b)**
28. Recognize and react appropriately to persons exhibiting emotional reactions **(NOCP 2.4.c)**
29. Act in a confident manner **(NOCP 2.4.d)**
30. Act assertively as required **(NOCP 2.4.e)**
31. Employ diplomacy, tact and discretion **(NOCP 2.4.f)**
32. Exhibit physical strength and fitness consistent with the requirements of professional practice **(NOCP 3.1.e)**
33. Practice safe biomechanics **(NOCP 3.2.a)**
34. Transfer patients from various positions using applicable equipment and/or techniques **(NOCP 3.2.b)**
35. Secure patients to applicable equipment **(NOCP 3.2.d)**
36. Assess scene for safety **(NOCP 3.3.a)**
37. Address potential occupational hazards **(NOCP 3.3.b)**
38. Practice infection control techniques **(NOCP 3.3.f)**
39. Clean and disinfect equipment (NOCP 3.3.g)
40. Clean and disinfect work environment **(NOCP 3.3.h)**
41. Obtain list of patient's allergies **(NOCP 4.2.a)**
42. Obtain patient's medication profile **(NOCP 4.2.b)**
43. Obtain chief complaint and/or incident history from patient, family members and/or bystanders **(NOCP 4.2.c)**
44. Obtain information regarding patient's past medical history **(NOCP 4.2.d)**
45. Obtain information about patient's last oral intake **(NOCP 4.2.e)**
46. Obtain information regarding incident through accurate and complete scene assessment **(NOCP 4.2.f)**
47. Conduct primary patient assessment and interpret findings **(NOCP 4.3.a)**
48. Conduct secondary patient assessment and interpret findings **(NOCP 4.3.b)**
49. Conduct cardiovascular system assessment and interpret findings **(NOCP 4.3.c)**

50. Conduct neurological system assessment and interpret findings **(NOCP 4.3.d)**
51. Conduct respiratory system assessment and interpret findings **(NOCP 4.3.e)**
52. Conduct gastrointestinal system assessment and interpret findings **(NOCP 4.3.g)**
53. Conduct genitourinary/reproductive system assessment and interpret findings **(NOCP 4.3.h)**
54. Conduct musculoskeletal assessment and interpret findings **(NOCP 4.3.j)**
55. Conduct geriatric assessment and interpret findings **(NOCP 4.3.o)**
56. Assess pulse **(NOCP 4.4 a)**
57. Assess respirations **(NOCP 4.4 b)**
58. Assess blood pressure by auscultation **(NOCP 4.4 d)**
59. Assess skin condition **(NOCP 4.4 g)**
60. Assess pupils **(NOCP 4.4 h)**
61. Assess level of consciousness **(NOCP 4.4.i)**
62. Conduct glucometric testing and interpret findings **(NOCP 4.5.c)**
63. Conduct 3-lead electrocardiogram (ECG) and interpret findings **(NOCP 4.5.m)**
64. Obtain 12-lead electrocardiogram and interpret findings **(NOCP 4.5.n)**
65. Utilize portable oxygen delivery systems **(NOCP 5.2.b)**
66. Maintain peripheral intravenous (IV) access devices and infusions of crystalloid solutions without additives **(NOCP 5.5.c)**
67. Conduct peripheral intravenous cannulation **(NOCP 5.5.d)**
68. Treat soft tissue injuries **(NOCP 5.6.a)**
69. Immobilize suspected fractures of the axial skeleton **(NOCP 5.7.b)**
70. Follow safe process for responsible medication administration **(NOCP 5.8.b)**
71. Administer medication via intravenous route **(NOCP 5.8.e)**
72. Provide care to patient experiencing illness or injury primarily involving cardiovascular system **(NOCP 6.1.a)**
73. Provide care to patient experiencing illness or injury primarily involving neurological system **(NOCP 6.1.b)**
74. Provide care to patient experiencing illness or injury primarily involving respiratory system **(NOCP 6.1.c)**
75. Provide care to patient experiencing illness or injury primarily involving gastrointestinal system **(NOCP 6.1.e)**
76. Provide care to patient experiencing illness or injury primarily involving integumentary system **(NOCP 6.1.f)**
77. Provide care to patient experiencing illness or injury primarily involving musculoskeletal system **(NOCP 6.1.g)**
78. Provide care to patient experiencing toxicologic syndromes **(NOCP 6.1.k)**
79. Provide care to trauma patient **(NOCP 6.1.o)**
80. Provide care to psychiatric patient **(NOCP 6.1.p)**
81. Conduct ongoing assessments based on patient presentation and interpret findings **(NOCP 6.3.a)**
82. Re-direct priorities based on assessment findings **(NOCP 6.3 b)**
83. Conduct vehicle maintenance and safety check **(NOCP 7.1.a)**
84. Work collaboratively with other members of the health care community **(NOCP 8.1.c)**

85. Work collaboratively with other emergency response agencies **(NOCP 8.2.a)**

Appendix 1
Advanced Care Paramedic
Quiz and Test Evaluations

Appendix A

Session Quizzes

Quiz Number	Modules Covered
01	1 & 2
02	3
03	4
04	5
05	6
06	7
07	8
08	9
09	10
10	11
11	12

Medical Terminology

Test Number	Modules Covered
Test 1	1-5, 106
Test 2	7-9, 12 and 13
Test 3	6, 11, 14-17

Tests and Exams

Test Number	Modules Covered
01	1 & 2
02	3
03	4
04	5
05	6
06	7
Mid-term	Modules 1 to 6
07	8
08	9
09	10
10	11
11	12
Final	Modules 7 to 12

Advanced Care Paramedic
Appendix 4C
(Excerpt from NOCP 2011)

Appendix 4C Pathophysiology

	Appendix 4C (ACP)
A. Cardiovascular System	
Vascular Disease	Aneurysm (intracranial, abdominal aortic)
	Arteriosclerosis
	Deep vein thrombosis
	Hypertension
	Peripheral vascular disease
	Thoracic aortic dissection
Inflammatory disorders	Endocarditis
	Myocarditis
	Pericarditis
Valvular Disease	Prolapsed mitral valve
	Regurgitation
	Stenosis
Acute Coronary Syndromes	Infarction
	Ischemia/angina
Heart Failure	Cardiomyopathies
	Left sided
	Pericardial tamponade
	Right sided
Cardiac Conduction Disorder	Benign arrhythmias
	Lethal arrhythmias
	Life threatening arrhythmias
Congenital Abnormalities	Atrial septal defect
	Patent ductus arteriosus
	Transposition
	Ventricular septal defect
Traumatic Injuries	Aortic disruption
	Myocardial contusion
	Peripheral vascular disruption
B. Neurologic System	
Convulsive Disorders	Febrile seizures
	Generalized seizures
	Partial seizures (focal)
Headache and Facial Pain	Infection
	Intracranial hemorrhage
	Migraine
	Tension
Cerebrovascular Disorders	Ischemic/hemorrhagic stroke
	Transient ischemic attack
Altered Metal Status	Metabolic
	Structural
Chronic Neurologic Disorders	Alzheimer's
	Amyotrophic lateral sclerosis (ALS
	Bell's palsy
	Cerebral palsy
	Multiple sclerosis
	Muscular dystrophy

	Parkinson's disease
	Poliomyelitis
Infectious Disorders	Encephalitis
	Guillian Barre syndrome
	Meningitis
Tumors	Structural
	Vascular
Traumatic Injuries	Head injury
	Hematoma (epidural, subdural, subarachnoid)
	Spinal cord injury
Pediatric	Downs syndrome
	Hydrocephalus
	Spina bifida
C. Respiratory System	
Medical Illness	Acute respiratory failure
	Adult respiratory disease syndrome
	Aspiration
	Chronic obstructive pulmonary disorder
	Hyperventilation syndrome
	Pleural effusion
	Pneumonia/bronchitis
	Pulmonary edema
	Pulmonary embolism
	Reactive airways disease/asthma
Traumatic Injuries	Aspirated foreign body
	Burns
	Diaphragmatic injuries
	Flail chest
	Hemothorax
	Penetrating injury
	Pneumothorox (simple, tension)
	Pulmonary contusion
	Toxic inhalation
	Tracheobronchial disruption
Pediatric Illness	Acute respiratory failure
	Bronchiolitis
	Croup
	Cystic fibrosis
	Epiglottitis
	Sudden infant death syndrome
D. Female Reproductive System and Neonates	
Pregnancy complications	Abruptio placenta
	Eclampsia
	Ectopic pregnancy
	First trimester bleeding
	Placenta previa
	Pre-eclampsia
	Third trimester bleeding
	Uterine rupture
Childbirth complications	Abnormal presentations

	Post partum complications
	Postpartum hemorrhage
	Prolapsed cord
	Uterine inversion
Neonatal complications	Cardiovascular insufficiency
	Meconium aspiration
	Respiratory insufficiency
E. Gastrointestinal System	
Esophagus/ Stomach	Esophageal varices
	Esophagitis
	Gastritis
	Gastroesophageal reflux
	Obstruction
	Peptic ulcer disease
	Upper gastrointestinal bleed
Liver/Gall Bladder	Cholecystitis/biliary colic
	Cirrhosis
	Hepatitis
Pancreas	Pancreatitis
Small/Large Bowel	Appendicitis
	Diverticulitis
	Gastroenteritis
	Inflammatory bowel disease
	Lower gastrointestional bleed
	Obstruction
Traumatic Injuries	Abdominal injuries - penetrating / blunt
	Esophageal disruption
	Evisceration
F. Genitourinary System	
Reproductive Disorders	Bleeding/discharge
	Infection
	Ovarian cyst
	Testicular torsion
Renal/Bladder	Colic/calculi
	Infection
	Obstruction
	Renal failure
	Traumatic injuries
G. Integumentary System	
Traumatic Injuries	Burns
	Laceration/avulsions/abrasions
Infectious and inflammatory Illness	Allergy/urticaria
	Infections
	Infestations
H. Musculoskeletal System	
Soft Tissue Disorders	Amputations
	Compartment syndrome
	Contusions
	Dislocations
	Muscular dystrophies

	Myopathies
	Necrotizing fascitis
	Sprain
	Strains
	Subluxations
Skeletal Fractures	Appendicular
	Axial
	Open/closed
Inflammatory Disorders	Arthritis
	Gout
	Osteomyelitis
	Osteoporosis
I. Endocrine System	
	Acid-base disturbances
	Addison's disease
	Cushing's disease
	Diabetes mellitus
	Electrolyte imbalances
	Thyroid disease
J. Multisystem Diseases and Injuries	
Cancer	Malignancy
Hematologic Disorders	Anemia
	Bleeding disorders
	Leukemia
	Lymphomas (Hodgkins, non-Hodgkins)
	Multiple myeloma
	Sickle cell disease
Infectious Diseases	Acquired immune deficiency syndrome
	Antibiotic resistant infection
	Influenza virus
	Malaria
	Meningococcemia/bacteremia
	Tetanus
	Toxic shock syndrome
Toxicologic Illness	Prescription medication
	Non-prescription medication
	Recreational
	Poisons (absorption, inhalation, ingestion)
	Acids and alkalis
	Hydrocarbons
	Asphyxiants
	Cyanide
	Organophosphates
	Alcohols
	Food poisoning
	Chronic alcoholism
	Delerium tremens
	Korsakov's psychosis
	Wernicke's encephalopathy
Environmental Disorders	Barotrauma

	Hyperthermal injuries
	Hypothermal injuries
	Air embolism
	Anaphylaxis/anaphylactoid reactions
	Decompression sickness
	Descent, ascent barotrauma
	Heat cramps
	Heat exhaustion
	Heat stroke
	High altitude cerebral edema
	High altitude pulmonary edema
	Local cold injuries
	Near drowning and drowning
	Radiation exposure
	Stings and bites
	Systemic hypothermia
Immunologic Disorders	Autoimmune disorders
Shock syndromes	Anaphylactic
	Cardiogenic
	Hypovolemic
	Neurogenic
	Obstructive
	Septic
Trauma	Assault
	Blast injuries
	Crush injuries
	Falls
	Rapid deceleration injuries
K. Psychiatric Disorders	
Anxiety Disorders	Acute stress disorder
	Generalized anxiety disorder
	Panic disorder
	Post-traumatic stress disorder
	Situational disturbances
Childhood Psychiatric Disorders	Attention-deficit disorder
	Autistic disorder
Cognitive Disorders	Delirium
Eating Disorders	Anorexia nervosa
	Bulimia nervosa
Affective Disorders	Bipolar disorder
	Depressive disorders
	Suicidal ideation
Psychotic Disorders	Delusional disorder
	Homicidal ideation
	Schizophrenia
Psychosocial disorders	Antisocial disorder
L. Ears, Eyes, Nose and Throat	
Eyes - Traumatic Injuries	Burns/chemical exposure
	Corneal injuries
	Hyphema

	Penetrating injury
Eyes - Medical Illness	Cataracts
	Central retinal artery occlusion
	Glaucoma
	Infection
	Retinal detachment
External, Middle and Inner Ear Disorders	Otitis externa
	Otitis media
	Traumatic ear injuries
	Vertigo
Face and Jaw Disorders	Dental abscess
	Trauma injury
	Trismus
Nasal and Sinus Disorders	Epistaxis
	Sinusitis
	Trauma injury
Oral and Dental Disorders	Dental fractures
	Penetrating injury
Neck and Upper Airway Disorder	Epiglottitis
	Obstruction
	Peritonsilar abscess
	Retropharygneal abscess
	Tonsillitis
	Tracheotomies
	Trauma injury-blunt/penetrating

Advanced Care Paramedic
Appendix 5
(Excerpt from NOCP 2011)

Appendix 5 Medications

		ACP
A. Medications affecting the central nervous system.		
A.1	Opioid Antagonists	X
A.3	Anticonvulsants	X
A.4	Antiparkinsonism Agents	X
A.5	Anxiolytics, Hypnotics and Antagonists	X
A.6	Neuroleptics	X
A.7	Non-narcotic analgesics	X
A 8	Opioid Analgesics	X
A 9	Paralytics	
B. Medications affecting the autonomic nervous system.		
B.1	Adrenergic Agonists	X
B.2	Adrenergic Antagonists	X
B.3	Cholinergic Agonists	X
B.4	Cholinergic Antagonists	X
B.5	Antihistamines	X
C. Medications affecting the respiratory system.		
C.1	Bronchodilators	X
D. Medications affecting the cardiovascular system.		
D.1	Antihypertensive Agents	X
D.2	Cardiac Glycosides	X
D.3	Diuretics	X
D.4	Class 1 Antidysrhythmics	X
D.5	Class 2 Antidysrhythmics	X
D.6	Class 3 Antidysrhythmics	X
D.7	Class 4 Antidysrhythmics	X
D 8	Antianginal Agents	X
E. Medications affecting blood clotting mechanisms.		
E.1	Anticoagulants	X
E.2	Thrombolytics	X
E.3	Platelet Inhibitors	X
F. Medications affecting the gastrointestinal system.		
F.1	Antiemetics	X
G. Medications affecting labour, delivery and postpartum hemorrhage.		
G.1	Uterotonics	X
G.2	Tocolytics	X
H. Medications used to treat electrolyte and substrate imbalances.		
H.1	Vitamin and Electrolyte Supplements	X
H.2	Antihypoglycemic Agents	X
H 3	Insulin	X
I. Medications used to treat / prevent inflammatory responses and infections.		
I.1	Corticosteroids	X

I.2	NSAID	**X**
I.3	Antibiotics	**X**
I.4	Immunizations	**X**
J. Medications used to treat poisoning and overdose.		
J.1	Antidotes or Neutralizing Agents	**X**