State of New Hampshire
Department of Safety
Division of Fire Standards & Training and EMS
Bureau of Emergency Medical Services

In Collaboration with:

National Registry of EMTs

National Continued Competency Program (NCCP)
(NREMT Recertification Requirements)

LOCAL Continued Competency Requirements (LCCR)

EDUCATION GUIDE

LOCAL Continued Competency Requirements (LCCR)

Local Continued Competency Requirements are developed and delivered at the local EMS level. LCCR represents 25% of the necessary requirements for all provider levels. The LCCR topics are chosen by state and local authorities. These topics may include changes in local protocols, tasks which require remediation based upon a quality assurance system, and/or topics noted to be of importance based upon run data reported to the National EMS Information Systems from the local level. These topics are locally chosen and will likely be different for every EMS system in the nation.

Implementation of local competencies can occur via a variety of methods. Meetings of local EMS system authorities such as the Chief of Operations, Medical Director, Training Officers and other officials can occur where topics can be identified based upon known data regarding local care. Following these meetings, educational methodologies can be utilized to determine how and when to deliver education to all affected providers in an EMS system.

In areas such as New Hampshire, protocols are state initiated. When these are implemented education regarding changes can be used to meet the local competency requirements.

Below is an example of how one local EMS system implemented the local competency requirement:

- A meeting of the EMS Operations Chief, Medical Director, Training Officer and some EMS supervisors occurred

- Data regarding runs that were reviewed to improve local delivery of care was gathered and reviewed by these officers

- Data that was obtained based upon local EMS system runs over the past year was presented to these officers

- The Medical Director suggested changes in local protocols and/or suggested enhanced interventions within the state scope of practice

- EMS supervisors suggested topics based upon feedback they had received from EMS providers regarding their desires or weaknesses

- The committee reviewed all of the data and input and determines top priorities and corresponding topics to be placed in the upcoming years local competencies.

- The Training Officer contacted local medical authorities who had expertise over the topic, requested the Medical Director to participate and/or assigned a willing supervisor to develop education delivery models based upon the identified topics.

During monthly in-services topics were presented by either, the local Medical Director, supervisor, educator, Training Officer or subject matter expert to present the topic.

A roster of who attended the lectures was maintained by the Training Officer who then entered the information on the NREMT website so that all who attended received credit for the hours toward meeting the local competency requirements.

LCCR (Local Continued Competency Requirements)

Emergency Medical Responder	Emergency Medical Technician
Required: 4 hours ***Documentation:*** **1 hour** *(available on NHOODLE)* ***Remaining*** **3 hours**: • **Contact your Training Officer and/or local Medical Director for service/regional topics**	**Required: 10 hours** ***Protocol Rollout:*** **~1 hour** *(NHOODLE)* ***Documentation:*** **1 hour** *(available on NHOODLE)* ***Advanced Spinal Assessment/Spinal Motion Restriction:*** **1 hour** *(available on NHOODLE)* ***Trauma System Triage/Trauma Team Activation/Air Medical Activation:*** **1 hour** *(catchment area specific – should be locally developed)* ***Remaining*** **6 hours***:* • **Contact your Training Officer and/or local Medical Director for service/regional topics**
Advanced Emergency Medical Technician	**Paramedic**
Required: 12.5 hours ***Protocol Rollout:*** **~1 hour** *(NHOODLE)* ***Documentation:*** **1 hour** *(available on NHOODLE)* ***Advanced Spinal Assessment/Spinal Motion Restriction:*** **1 hour** *(available on NHOODLE)* ***Trauma System Triage/Trauma Team Activation/Air Medical Activation:*** **1 hour** *(catchment area specific – should be locally developed)* ***Remaining*** **8.5 hours***:* • **Contact your Training Officer and/or local Medical Director for service/regional topics**	**Required: 15 hours** ***Protocol Rollout:*** **~1 hour** *(NHOODLE)* ***Documentation:*** **1 hour** *(available on NHOODLE)* ***Advanced Spinal Assessment/Spinal Motion Restriction:*** **1 hour** *(available on NHOODLE)* ***Trauma System Triage/Trauma Team Activation/Air Medical Activation:*** **1 hour** *(catchment area specific – should be locally developed)* ***Remaining*** **11 hours***:* • **Contact your Training Officer and/or local Medical Director for service/regional topics**

LCCR Topic	DOCUMENTATION AND THE EMS PROFESSIONAL
Patient Group	Adult and Pediatric
Provider Level	Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced EMT (AEMT), Paramedic
Instructor Preparation	Review National EMS Education Standards
Learning Objectives	*By the end of this lesson, the student will be able to:* • Understand how good documentation of EMS patient care fits into the overall continuum of a patient's healthcare. • Describe how EMS professionalism is reflected by the quality of a complete EMS Incident Report • Understand the range of organizational and global parties with a vested interest in the presence and quality of EMS documentation. • Define when an EMS Incident Report (EMSIR) is required to be completed. • Differentiate between "minimum validation" and "relevant, quality data". • Describe the three standard methods of documenting a narrative. • Describe each section for the CHART narrative method and the required information for each section. • Describe documentation liabilities • List and describe common documentation errors • Identify common reasons EMS professionals may be named in litigation • Define best practices to avoid litigation related to documentation
Curriculum Hours	1-2 hours

CONTENT	**EMS documentation and the continuum of care**
	
	What does documentation do?
	
	• Aids in seamless care
	• Supports continuity of care
	• Evidence of professionalism
	• Supports billing reimbursement
	• Supports national information tracking
	• Legal protection
	• Influences patient care
	• Reflection of professionalism
	
	Who uses EMS Documentation and how?
	
	• Hospitals
	  o Support findings and treatments
	• Health Department
	  o Support findings and treatments
	• Your agency
	  o Cost recovery
	• Insurance companies
	  o Verify accuracy of charges
	• Attorneys
	  o Litigation
	• Local and state departments
	  o QA/QI

	Documentation and EMS professionalism
	
	• Legal protection
	• Record of quality care
	  o Approved interventions
	  o Pt. response
	  o Delivery to definitive care
	
	Patient Care Report (PCR) vs. EMS Incident Report (EMSIR)
	
	• PCR Components
	  o BLS
	  ▪ Patient complaint
	
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	• Signs/symptoms
	  ▪ Basic assessment findings
	  ▪ Vital signs
	  ▪ Treatments
	  o ALS
	  ▪ All BLS components
	  ▪ Detailed assessment
	  ▪ Advanced treatments
	  ▪ EKG
	  ▪ Intubation
	  ▪ CO2
	  o EMSIR components
	  ▪ Complete anytime a call is initiated
	  • Dispatched
	  • Canceled
	  • No transport
	  • Refusal
	  • DOA
	  • Patient care delivered
	  ▪ Record of information
	  • Unit information
	  • Response times
	  • Response location
	  • Type and reason for call
	  • Outcome of response
	  • Your actions
	  o PCR should include all components of EMSIR plus all components of PCR
	  ▪ Response information
	  ▪ Scene information
	  ▪ Patient condition
	  ▪ History
	  ▪ Assessment
	  ▪ Treatment
	  ▪ Transport information

	Evolution of Documentation ***Paper documentation*** • No spell check • Poor handwriting • Difficult to store • Research slow and cumbersome →→

ePCRs

- Standardization
- Patient information dissemination
- Research data capture
- Reduced errors
- Billing simplified

Trauma and EMS Information System (TEMSIS)

- Implemented 2005
- Provides access to EMS run information
- Mandatory for all EMS in NH
- Complete within 24 hours of incident
- Provide a copy to receiving hospital
- Know your policies

Submit an EMSIR for Emergent calls:

- All 911 incidents where a unit was requested for EMS care, whether they acted or responded with or without lights and sirens
- Walk-ins and on-site calls
- Emergency standbys for fire scenes, police, and hazmat incidents
- Cancelled calls
- No patient found
- Patient assist/lift assist
- Patient refusals
- Treated and transferred care to another EMS unit
- Emergent inter-facility transfers

Submit an EMSIR for Non-Emergent calls

- Scheduled standbys where the unit is committed for the event (e.g. ball games, concerts, etc.) even with no patient contact
- Inter-facility transfers – Hospital to hospital or nursing home
- Medical transports – This is a transfer where a hospital is not involved and includes (but is not limited to):
    - Dialysis runs
    - Doctor office visits
    - Return home transports
    - X-rays or other diagnostic testing
    - Chemotherapy/radiation therapy appointments, etc.

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Writing it down

- Record EVERYTHING
  - From time of call
  - To patient delivery
  - Consult your protocols

Organizational – Quality improvement

- Sustains – what went right?
- Improves – what didn't?
- Data driven improvements

Global – Quality Improvement

- Operational improvements
- Accuracy dependent
- NH EMS
  - Established standards of care
  - Documentation of standards
  - Deficiencies identified

Minimum Validation

- Minimum data
  - Run times
  - Crew members
  - Scene address
  - Type of call
  - Reason for call
  - Patient disposition
- State/Service required data
  - Patient name/address
  - Vital signs
  - Treatment
  - Transport info

Relevant Quality Data

- Dependent upon type of incident
- Provides a clear picture of the incident
- Focus on the most appropriate information based upon context of incident
- Pertinent negative
  - Sign/Symptom not present that typically may be based on complaint
  - Relevant information for care
  - Complete assessment and treatment

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- Special situations
  - Crime scenes
    - Scene details are relevant
    - Obtaining history of condition
    - Use direct quotations
    - Legal Document
  - Deviating from protocol
    - Contact medical control as needed
    - Document conditions, Physician name, treatment, response
- Helps all involved
- Quantifiable data
- Credibility as a professional
- Minimum Validation + Relevant Quality Data = Professional and Complete Documentation

Medical Narrative

- Chronological method
  - Description of everything in the order it occurred
  - Logical, but may become confusing
  - Lack of consistent structure
  - Details may be left out
- SOAP method
  - Subjective
    - What the patient tells you
    - Symptoms
    - Chief complaint
    - History
    - Other related relevant quality data
  - Objective
    - Observed scene details
    - Vital signs
    - Signs of illness/injury
    - Diagnostic results
  - Assessment
    - Head-to-toe assessment findings
    - Field diagnosis
  - Plan
    - What you did and what the response was
    - Include medical control information as needed

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- CHART method
  - More manageable than SOAP
  - Preferred by NH Bureau of EMS
  - Chief complaint
    - Location type
    - Pt. age and gender
    - Dispatch reason and designation
    - Unit responding
    - Immediate? As scheduled?
    - Type of request – 911 or transfer
    - What you actually found upon arrival
  - History
    - Important in patient care
    - Who provided the history? (patient, family, bystander, etc.)
    - Relevant medical history
      - Allergies
      - Medications
    - Narrative story of events
    - Trauma – note seat belts or helmet use
    - Self-treatment by patient
    - Symptoms
    - Pertinent negatives
    - Thorough complaint description
    - Secondary crews – note care from initial EMS crew
  - Assessment
    - General impression
    - Paint the picture for the reader
      - Setting
      - Patient position
      - What was the patient doing?
      - Do they look sick?
    - Physical assessment
    - Primary and/or secondary assessment
    - Review of systems
    - Diagnostic results
      - ECG
      - Capnography
      - Blood glucose
      - Vital signs outside of normal
  - Rx – Treatment
    - Record all interventions
    - Note level of provider – ALS or BLS
    - ALL treatments
    - Protocol(s) used
    - Patient response to treatments
    - Changes in condition
    - How was the patient moved?

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- Transport
  - Focus on transportation details
    - Destination
    - Response priority
    - Changes in status
    - Transfer of care
  - Additional details for intercepts
    - BLS record:
      - Time of ALS request
      - Time of intercept
      - Continuation of ALS care
      - Reference ALS treatment
    - ALS record:
      - Patient report from BLS
      - Request for response
- Patient Privacy
  - Never include patient name, address, other identifying information in the narrative
  - ePCRs only "hide" patient info elsewhere in the run form
- Key points to remember
  - Facts only
  - Odors on breath
  - PBT results "the patient stated 'I had 3 beers and a shot of whisky.'"

Documentation Liabilities

- Documentation must be complete and factual
- Federal law prohibits falsification
- Accidents do happen
- Billing depends upon facts
- Illegitimate tampering
- Honesty is the best policy
- Follow your SOPs
- Keep it professional
- Poor documentation (incomplete/inaccurate) leads to legal trouble
- Minimum validation with relevant quality data ensures complete documentation which is less likely to create legal liabilities

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Avoiding Errors

- Inaccurate times
  - On scene
    - When did you really get there?
    - When did you actually get to the patient's side?
  - Procedures – documenting times
    - Be as accurate as possible
    - Avoid 1 minute intervals – procedures may have the same time because each procedure takes less than a full minute to complete
    - Be realistic
    - Equipment available – use "Event Markers" on cardiac monitors to help track times
- Improper abbreviations
  - Use only commonly accepted abbreviations
  - Freelancing abbreviations may mean that you can't recall what a particular abbreviation means when your report is called into litigation, many times years later
- Vital signs
  - Be accurate
  - Be careful of using "Not Applicable"
  - Don't leave it up to the lawyers to interpret your meaning
- Medication documentation
  - Medication name
  - Patient condition prior to administration
  - Route
  - Dosage
  - How given (rapid, slow, etc.)
  - Crew member administering
  - Patient response to the medication
- Pertinent negatives
  - Aids diagnosis
  - Aids in interventions
  - Document your findings
    - ie: Auscultate 4-fields, front and back, NEGATIVE Epigastric sounds
- Signatures
  - Your signature
    - Indicates a factual report
  - Patient or representative signature
    - Accepted treatment and transport
    - Accepted billing/financial responsibility
  - Patient refusals
    - Implies denial of service
    - Advised of consequences

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	• Protocols
	  o Treatment should match
	  o Deviation
	  ▪ Approved by medical control
	  ▪ Thorough documentation
	  o Will your documentation be able to defend your actions?
	• Special situations
	  o Multiple and mass casualty incidents
	  ▪ "Missing" patients
	  ▪ Manage and document
	  ▪ Know your protocols
	  o Restraints
	  ▪ Follow protocol
	  ▪ Document your actions
	  • Be descriptive
	  • Use direct quotes
	  • Medical Control
	  o Refusal of Care
	  ▪ Patient has right to refuse care
	  ▪ Their condition may not be treated
	  ▪ Still document visual assessment if they refuse contact
	  • Skin
	  • Respiratory rate
	  • LOC
	  • Chief Complaint
	  • Anxiety level
	  • Pain
	  ▪ Complete documentation
	  ▪ Act in the best interest of the patient
	  ▪ State the consequences of refusing
	  ▪ Utilize Medical Control if needed
	  ▪ Obtain patient signature
	  ▪ Obtain witness signature
	  ▪ Consult your protocols

	SUMMARY

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LCCR Topic	ADVANCED SPINAL ASSESSMENT and SPINAL MOTION RESTRICTION
Patient Group	Adult and Pediatric
Provider Level	Emergency Medical Technician (EMT), Advanced EMT (AEMT), Paramedic
Instructor Preparation	Review National EMS Education Standards and New Hampshire Patient Care Protocols
Learning Objectives	*By the end of this lesson, the student will be able to:* • Discuss the history of prehospital spinal immobilization and new protocol development. • Describe the anatomy and physiology of structures related to spinal injuries.(C-1) • Describe the pathophysiology of spine injuries. (C-1) • Relate mechanism of injury to potential traumatic spinal injuries. (C-1) • Describe the assessment findings associated with traumatic spinal injuries. (C-1) • Describe the management options and associated risks and benefits for possible traumatic spinal injuries. (C-1) • Develop a patient management plan for possible traumatic spinal injury based on the assessment findings. (C-3) • Advocate the use of a thorough assessment when determining the proper management option for potential traumatic spine injuries. (A-3) • Value the risks and benefits of each management option for potential spinal injuries. (A-3) • Demonstrate a clinical assessment to determine the proper management option of a patient with a suspected traumatic spinal injury. (P-1, 2, 3) • Demonstrate the application of the Spinal Motion Restriction per NH Patient Care Protocol. (P- 1, 2)
Curriculum Hours	1-2 hours

CONTENT	**Historical perspective of prehospital management of suspected spinal cord injuries** ***Spinal cord injury (SCI) impacts*** • Human physiology • Lifestyle • Financial • $1.25 million to care for a single victim with permanent SCI (overall life span) ***Secondary to potential impact of a SCI, prehospital management of suspected spinal cord injuries has emphasized full immobilization based on any MOI with a potential for a SCI***

	Progression of prehospital spinal assessment and management
	
	• Effort to align prehospital care with ED care.
	• Studies (i.e. NEXUS 2000) and recommendations (i.e. 2000 Update - EAST Cervical Spine Clearance Document) showing that a stepped clinical decision rule for suspected SCI is effective in the prehospital setting.
	• No evidence to indicate that backboard application is helpful, and some evidence that it may actually be harmful.
	• Potential complications of full immobilization:
	  o Increased pain and discomfort
	  o Psychological affects
	  o Nausea/vomiting
	  o Complicate treatment of patient when not necessary

	General spinal anatomy and physiology review ***Spinal column*** • Long bone • 33 vertebrae • Head balances at top of spine • Spine supported by pelvis • Ligaments and muscles connect head to pelvis • Injury to ligaments may cause excess movement of vertebrae ***Cervical spine*** • 7 vertebrae • Supports head (15 - 22 lbs.) • Very flexible • C1 (atlas) • C2 (axis) →→

Thoracic spine

- 12 vertebrae
- Ribs connected
- Provides rigid framework of thorax

Lumbar spine

- 5 vertebrae
- Largest vertebral bodies
- Flexible
- Carries most of body weight
- Torso balances on sacrum

Sacrum

- 5 fused vertebrae
- Common to spine and pelvis

Coccyx

- 4 fused vertebrae
- Tailbone

Vertebral structure

- Body
  - Constructed of cancellous bone
  - Posterior portion forms part of the vertebral foramen
  - Increase in size when moving from cervical to sacral region for support of the trunk
- Vertebral foramen
  - When all vertebrae are in place forms opening for spinal cord (vertebral canal)
- Transverse process
  - Projects laterally and posteriorly
  - Attachment site for various muscles and ligaments
- Spinous process
  - Posterior aspect
  - Attachment site for muscles and ligaments
- Intervertebral disk
  - Mass of fibrocartilage separating each vertebrae
  - Connecting together by ligaments
  - Acts as a shock absorber
    - Reducing bone wear
    - Compression protection

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Brain and spinal cord (central nervous system)

- Brain
  - Largest and most complex portion of the nervous system
  - Continuous with spinal cord
  - Responsible for all sensory and motor functions
- Spinal cord
  - Located within the vertebral canal
    - Begins at foramen magnum
    - Ending near L-2 (cauda equina)
  - Dural sheath
    - Sheathed, tube-like sac
    - Filled with cerebrospinal fluid (CSF)
- Ascending nerve tracts
  - Carries impulses from body parts and sensory information to the brain
  - Conduct sensory impulse from skin, muscle tendons, and joints to the brain for interpretation as sensations of touch, pressure, pain, temperature and body movement
  - Cross over at the medulla oblongata from one side to the other, therefore impulses originating from the left side ascend to the right side of the brain and vice versa
- Descending nerve tracts
  - Carries motor impulses from the brain to the body. Motor impulses originate in the brain to control muscle tone, sweat gland, muscle coordination and control of posture.

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- Spinal nerves
  - 31 pairs
    - Originates from the spinal cord
  - Mixed nerves
    - Carries both sensation and motor function
    - Provides two-way communication between spinal cord and body parts
  - Named according to level of spine from which they arise
    - Cervical 1-8
    - Thoracic 1-12
    - Lumbar 1-5
    - Sacral 1-5
    - Coccygeal 1 set of nerves
  - Spinal nerve
    - Emerges from the cord
    - Two short branches or roots (Dorsal Root - sensory impulse from the cord. Ventral Root - motor impulses from the cord to the body
  - Motor myotomes and sensory dermatomes
    - Myotome is the group of muscles primarily innervated by the motor fibers of a single nerve root.
    - Dermatome is the skin area innervated by the sensory fibers of a single nerve root
    - Mapped out by level of the spinal nerve
    - Useful for assessment for a specific level of SCI
    - Examples of common nerve root and motor/ sensory correlation:

Nerve Root	Motor	Sensory
C-3, 4	Trapezius (shoulder shrug)	Top of shoulder
C-3, 4,5	Diaphragm	Top of shoulder
C-5, 6	Biceps (elbow flexion)	Thumb
C-7	Triceps (elbow extension) wrist/ finger extension	Middle finger
C-8/ T-1	Finger abduction/adduction	Little finger
T-4	Nipple	
T-10	Umbilicus	
L-1, 2	Hip flexion	Inguinal crease
L-3, 4	Quadriceps Medial thigh/ calf	
L-5	Great toe/ foot dorsiflexion	Lateral calf
S-1	Knee flexion	Lateral foot
S-1, 2	Foot plantar flexion	
S-2, 3,4	Anal sphincter tone	Perianal

Pathophysiology of Spinal Injuries

Mechanisms and Associated Injuries

- Hyperextension
  - Most commonly in the cervical and/or lumbar area
  - Potential disk disruption, compression of ligaments, fractures
  - Torn ligament and/or fractures may lead to instability
- Hyperflexion
  - Most commonly in the cervical and/or lumbar area
  - Potential anterior vertebral body wedge fractures, stretch/torn ligaments, cord compression, disk disruption with potential vertebrae dislocation
- Rotational
  - Most commonly in the cervical area but possibly in lumbar region as well
  - Potential stretching/tearing of ligaments, rotational subluxation or dislocation, fractures
- Compression
  - Most commonly between T12 and L2
  - Potential compression fractures, herniated/ruptured disk
- Distraction
  - Most commonly in upper c-spine
  - Stretching/pulling of the cord
  - Potential damage to cord without damage to spinal column, potential torn ligaments
- Penetrating
  - Forces directed to spinal column
  - Potential fractures, damage to cord, disruption of ligaments

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Specific Injuries

- Fracture
  - Cause potential instability
  - Loose bone fragments
  - Disruption of cord
- Ligament, Tendons and/or Muscles
  - Potentially stretched, compressed or torn/disrupted
  - Potential instability of spinal column
- Dislocations / Subluxation
  - Displacement of Vertebrae potential disrupting the cord
  - Potential instability to spinal column
- Disk Herniation / Rupture
  - Displacement or rupture of disk
  - Potential disruption of cord
- Cord Injuries
  - Concussion
    - Temporary or transient disruption of cord function
    - Similar to cerebral concussion
    - Generally does not produce residual deficits
  - Contusion
    - Bruising of the cord with associated tissue damage, swelling, vascular leakage.
    - Blood crossing blood-brain barrier may increase swelling significantly.
    - Likely to recover from with limited or no deficit.
  - Compression
    - Pressure on cord secondary to swelling, vertebrae displacement, disk herniation, etc.
    - Causes potential restricted circulation, ischemia or physical damage to cord
  - Laceration
    - Direct damage to cord
    - Likely to involve hemorrhage into cord tissue, associated swelling, and possible disruption of cord
    - Potential disruption of cord "communication" pathways
    - Minor laceration may have some recovery. Severe laceration usually results in permanent damage.
  - Hemorrhage
    - Often associate with other injury such as laceration, contusion, stretching, etc.
    - Causes potential disruption of blood flow, pressure to cord, and/or irritation secondary to blood crossing blood-brain barrier
    - Potential ischemic injuries secondary to decreased blood flow

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	o Transection ▪ Partial or complete disruption of cord ▪ Causes partial or complete loss of sensory and motor function below injury site • Spinal Shock o Temporary insult to cord that affect the body below the level of the injury o Affected areas are flaccid, loss of sensation, loss of motor control o Potential priapism, loss of bowel/bladder control, loss of temperature regulation o Potential hypotension o Generally transient problem if no significant injury to cord • Neurogenic Shock o Injury to cord that affects the brain's ability to control body o Disruption can affect vasoconstriction below level of injury ▪ Decreased sympathetic tone causes expansion of arteries and veins creating a relative hypovolemia ▪ Decreased cardiac output secondary to decreased preload ▪ Decreased epinephrine release resulting in decreased heart rate, decreased blood pressure and decreased vasoconstriction
	Signs and symptoms which may indicate SCI: o Pain o Tenderness o Painful movement o Deformity o Cuts/ bruises (over spinal area) o Paralysis o Paresthesias o Paresis (weakness) o Shock o Priapism →→

General assessment and Management of spinal injuries

- Perform scene size up and initial assessment
- Perform focused history and physical exam - Determine mechanism of injury/ nature or injury
    - Positive MOI - Forces or impact involved suggest a potential SCI
        - Examples:
            - High speed motor vehicle crash(es)
            - Falls greater than three times patient's height
            - Axial Loading
            - Violent situations occurring near the spine
            - Sports injuries
            - Other high impact situations
            - Consideration to special patient population (e.g. pediatrics, geriatrics, history of Down's, etc.)
    - Negative MOI - Forces or impact involved does not suggest a potential spinal injury
        - Examples
            - Dropping a rock on foot
            - Twisted ankle while running
            - Isolated soft tissue injury
    - Uncertain MOI - Unclear or uncertainty regarding the impact or forces
        - Examples
            - Person trips over garden hose, falling to the ground and hitting their head
            - Fall from 2-4 feet
            - Low speed motor vehicle crash (fender bender)
    - When using the Advanced Spinal Assessment, positive mechanism of injury is not considered means to necessitate spinal motion restriction of a patient, but should be used as a historical component that may heighten a provider's suspicion for a spine injury.

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- Advanced Spinal Assessment
  - Define NH Patient Care Protocols
    - Issued by the NH Medical Control Board (MCB) and NH Bureau of EMS
    - Role of Medical Resource Hospital (MRH) standing orders/off-line versus on-line
    - Scope of education v. scope of practice
  - Performed per NH Patient Care Protocols at the EMT level or higher for patients who have sustained a positive or uncertain mechanism of injury/ nature of injury
  - Determine patient reliability
    - Reliable patient
      - Must be over 12 years old, calm, cooperative, sober and alert and oriented to person, place and time
      - If reliable then may continue assessment
    - Unreliable patient
      - Altered mental status (dementia, brain injury, psychosis, developmental delay, etc.)
      - Intoxication (alcohol and/or drugs)
      - Acute stress reaction
      - Distracting injury (injury that potentially could distract a patient from the pain of a spine injury)
      - 12 years old and under
      - Communication barrier (deafness, language, etc.)
      - If unreliable, then consider spinal motion restriction
  - Ask patient about spine pain
    - Pain present - consider spinal motion restriction
    - Pain not present - continue assessment
  - Palpate entire spine for tenderness
    - Palpate over each of the spinous processes of the vertebra
    - Positive tenderness - consider spinal motion restriction
    - Non tender - continue assessment

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- Perform Motor Exam
  - Finger abduction and adduction
    - Have patient spread fingers of both hands while you try to squeeze the index finger and ring finger together. Normal resistance should feel like a spring and both sides should have equal strength. (tests the T1 nerve root)
  - Finger/wrist flexion and extension
    - Hold patient's arm at the wrist. Have patient try to extend the hands and fingers while you push down against them. The patient should be able to resist moderate pressure and both sides should have equal strength. This may be modified to accommodate an injured wrist or finger by isolating the affected part. (tests the C7 nerve root)
  - Foot/great toe flexion and extension
    - Have patient push down with both feet. There should be equal strength on both sides. (tests S1, S2 nerve roots)
    - Have patient pull the foot up towards the nose. There should be equal strength on both sides. (tests L5 nerve root)
  - Abnormal exam – consider spinal motion restriction
  - Exam within normal limits - continue assessment
- Perform Neurosensory Exam
  - Soft vs. Sharp Touch discrimination in both upper and lower extremities
    - Have the patient close his or her eyes. Touch the patient on the distal portion of an extremity using a dull and then a pointed object. The patient should be able to sense and differentiate a pinprick from a dull sensation. All 4 extremities should be checked and same general area should be tested on both upper extremities and both lower extremities.
  - Gross Sensation - abnormal if patient is complaining of parethesias or radicular pain to one or more extremities. If the patient has a localized injury, that may be taken into consideration.
  - Abnormal exam – consider spinal motion restriction
  - Exam within normal limits - continue assessment

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	o If part of the exam cannot be completed due to local injury entire exam is unreliable. o If patient meets above criteria and can flex, extend and rotate their neck without pain, then spinal motion restriction is not necessary. o There may exist the rare exception and there are different levels of provider comfort. With that in mind, each provider and team must determine a management plan on a case by case basis, and when in doubt may opt to provide spinal motion restriction. • Perform Ongoing Assessment • Communication o Assessment findings (include the results of Advanced Spinal Assessment) o Treatments o Results of treatments • Documentation o Assessment findings (include the results of Advanced Spinal Assessment) o Treatments o Results of treatments • Performance Improvement / Quality Improvement
	Review of principles of spinal motion restriction • Primary goal is to prevent further injury • Rule-in process o Provide spinal motion restriction only for patients exhibiting clinical signs or symptoms of an injury or who cannot be adequately assessed. • Spinal motion restriction includes a cervical collar and having the patient lie down on the stretcher o Use of backboards is eliminated except for use in extrication o Patient should be removed from backboard as soon as practical • All levels of EMS Providers • Patients of all ages • Exercise caution with the very young and very old →→

- Indications for spinal motion restriction:
    - Positive findings during advanced spinal assessment
    - Midline spinal pain or tenderness upon palpation
    - Abnormal neurologic function or motor strength in any extremity
    - Numbness or tingling in any extremity
    - Sensation is not intact or not symmetrical
    - Midline spinal pain caused by cervical flexion, extension or rotation
    - Unreliable patients
        - Dementia
        - Pre-existing brain injury
        - Developmental delay
        - Psychosis
        - Alcohol or drug intoxication
        - Significant distracting injury to themselves or someone else
        - Insurmountable communication barriers
    - Patients without any of these findings should generally be transported without the use of a cervical collar or other means to restrict spinal motion
    - Utilize spinal motion restriction only when in the professional judgment of the provider the patient is at high risk of spinal injury as described or with clear indications of injury such as midline spinal pain or deformity of the spine
- Procedure
    - Apply manual inline stabilization of the patient's spine
    - Minimize spinal movement during assessment and extrication
    - Apply cervical collar
    - Have the patient sit down on the stretcher and then lie supine
    - Secure patient to the stretcher firmly with all straps and leave the cervical collar in place
    - Instruct the patient to avoid moving his/her head or neck
    - Utilize full-length immobilization devices only for extrication
        - Apply sufficient padding if necessary
        - Remove patient from device once they are on the stretcher
        - Patients should only be transported to the hospital on a backboard if it is absolutely necessary for patient safety
            - Dealing with a combative patient
            - To support other treatment priorities
            - Removal would delay transport of an unstable patient
- Not all patients who have experienced a high risk mechanism of injury need spinal precautions
- The trigger for spinal precautions is either the presence of actual clinical symptoms of an injury or the inability to competently assess the patient due to the presence of a barrier such as significant dementia