BUREAU OF OPERATIONS
EMS COMMAND ORDER 2011-044
March 1, 2011

MONTHLY DRILL FOR MARCH 2011

1. GENERAL INFORMATION

1.1 The designated drill for March 2011 is Core Skill: Fracture Management. The Journal CME article for March 2011 is Crime Scene Management. Station Officers shall conduct drills in accordance with EMS Operating Guide Procedure 104-03, Addendum 2, *Drills and Instruction Periods*. Journal CME shall be completed in accordance with EMS Operating Guide Procedure 104-03, Addendum 4, *Journal Continuing Medical Education*.

1.2 The Drill includes a review of summary of Command Orders and Office of Medical Affairs Directives issued between February 1, 2011 and March 1, 2011 (EMS Command Orders 2011-027 to 2011-044) that effected policy or procedures. All members should be familiar with these orders. The original orders are available for review on the FDNY Intranet which can be accessed through the station and ePCR computers.

1.3 Video drill materials have been distributed by the EMS Academy. The other training materials have been distributed from EMS Operations via e-mail and through TRAQs. **Station Commanding Officers shall contact the EMS Academy if the video and training devices have not been received.**

2. PROCEDURE

2.1 Officers shall prepare for the monthly drill by reviewing the drill materials, facilitator guide, skill sheets and the original Command Orders listed in the policy and procedure review.

2.2 EMS Officers conducting drills shall discuss the details of each order in the policy and procedure review with members during drill and instruction periods.

2.3 Officers shall distribute the Journal CME to each member and ensure each member completes the associated quiz in TRAQs. Quiz questions will no longer be included with the Journal CME booklet and can only be accesses through TRAQs.

3. MATERIALS

3.1 Core Skill: Fracture Management DVD, facilitator guide and skill sheets.

3.2 Crime Scene Management Journal CME article.

4. POLICY AND PROCEDURE REVIEW

4.1 EMS Command Orders

2011-027	Changes the procedure for performing an operational check of the HeartStart MRx.
2011-028	Update s the procedure for ambulances tire chains.
2011-030	Announces the appointment of EMS Chief Officers.
2011-031	Announces the recruitment of paramedic preceptors.
2011-032	Describes the new carry case for cold saline.
2011-033A	Announces changes to the Ambulance Matrix in Division 3.
2011-034	Announces the new National Terrorism Advisory System.
2011-035	Announces Captains promotional opportunities.
2011-039	Announces a new Cardiac Arrest Center.
2011-040	Warns members of possible wage garnishment for unpaid personal parking tickets.
2011-041	Announces construction on Pelham Parkway South that may effect access to Jacobi Hospital (H 20).
2011-042	Announces recalls of medical equipment.
2011-043	Announces distribution of new Metrocards.

BY ORDER OF THE CHIEF OF EMS COMMAND

EMS TRAINING DRILL
2011_D03

CORE SKILL: FRACTURE MANAGEMENT FACILITATOR GUIDE

1. DESCRIPTION

1.1 This month's drill will focus on the proper technique for managing long bone fractures and joint injuries as well as how to properly apply a traction splint for a mid-shaft femur fractures. Blunt force trauma can cause a fracture or dislocation of one or more bones and a painful, swollen deformity (i.e., fracture) if left untreated, has the potential to alter the quality of life of your patient. Once the scene size up and initial assessment have been completed and no critical conditions are found, a fracture or dislocation should be identified during the focused physical exam. Suspected fractures and dislocations should be splinted or secured prior to transport, unless other life threatening injuries or conditions require immediate transport. Musculoskeletal trauma resulting in fractures or dislocations require prompt and appropriate management in order to prevent further injury and to minimize pain and discomfort. The goal of splinting, whether for a fracture or dislocation, is to minimize movement to the affected area. The joint above and below the affected area should be immobilized. Regardless of the splint that is utilized, the principles of treatment remain the same. Stabilizing the extremity, assessing a pulse, motor and sensory, applying a splint or securing device and reassessing pulse, motor, and sensory should be accomplished without excessive movement to prevent further injury and to minimize pain. Additional treatment for a suspected fracture should include pain management. This may be accomplished by cooling the affected area and requesting ALS to administer medication for pain management. The DVD video in conjunction with skills practice and evaluation will help reinforce your ability to successfully manage these types of traumatic injuries.

2. LESSON OBJECTIVES

2.1 At the end of this lesson the participants will be able to:

2.1.1 State the goals of properly identifying and treating a patient with suspected long bone fractures and/or joint injuries.

2.1.2 Identify the elements that are critical when assessing and treating a suspected fracture or dislocation.

2.1.3 Identify the equipment that is necessary to properly immobilize a fracture or dislocation.

2.1.4 Identify special considerations when assessing and managing a fracture or dislocation.

3. SKILLS

3.1 Perform proper immobilization of a suspected radius/ulna fracture.

3.2 Perform proper immobilization of a suspected tibia/fibula fracture.

3.3 Perform proper immobilization of a suspected mid-shaft femur fracture.

4. EQUIPMENT

4.1 DVD Player

4.2 Fracture Management Drill Video DVD

4.3 Gloves, short and medium rigid splints, cravats, roller gauze, 4x4s, 8x10s, multi trauma dressings, and a traction splint with ankle hitch

4.4 Facilitator Guide with timeline and scenario skill sheets. This drill does not have a Student handout and the facilitator guide **should not** be distributed to the crews.

5. DRILL

5.1 The Officer should review the Fracture Management video drill with the crews.

5.2 The DVD video drill should be viewed in its entirety by all participants and the skills practiced during selected times in video.

5.3 The Officer should present scenarios at designated practice times during the video.

5.4 Each crew member should demonstrate proper fracture management technique for every scenario presented.

5.5 The Officer should participate during the scenarios and act as the victim or 3rd rescuer if necessary.

5.6 The Officer should discuss with the participants:

5.6.1 Scene safety and appropriate PPE to be utilized when assessing and treating a patient with a suspected fracture or dislocation.

5.6.2 Importance of properly identifying life threatening conditions compromising the airway, breathing, or circulation prior to managing a suspected fracture. Splinting should not delay transport of the critical or unstable patient (**Life over limb!**).

5.6.3 Blunt forces strong enough to fracture long bones may also compromise the spine. Assess the need to protect the cervical spine prior to immobilizing the extremity. Ensure awareness of mechanism of injury and address spinal injuries prior to extremities.

5.6.4 Open fractures may have significant bleeding due to vascular compromise and are susceptible to infection. Always cover open wounds with dry, sterile dressings.

5.6.5 Indications for immobilizing a suspected fracture or dislocation may include mechanism of injury, painful, swollen deformity of a long bone or joint or reduced range of motion. When in doubt, apply a splint or securing device.

5.6.6 The goal of properly identifying and treating a suspected fracture or dislocation is to prevent further injury to bones, muscles, nerve endings and blood vessels. Immobilizing the joint above and below the affected area will prevent increased pain from movement of bone ends. In addition, proper immobilization may prevent restriction of blood flow caused by pressure of bone ends on blood vessels as well as preventing a closed fracture from becoming an open fracture. Angulated long bone deformities and cyanotic or pulseless deformities should be straightened using gentle traction provided resistance is not felt, into a splintable position. Angulated joint injuries should be immobilized in the position found unless effective immobilization is unable to be performed in its position. Assessing a distal pulse, motor function, and sensation in the injured extremity should be performed before and after immobilization. Proper assessment and treatment of a fracture or dislocation may include management of severe pain. This can be accomplished by cooling the injured area by applying cold packs. Morphine Sulfate can also be administered by ALS providers under standing orders for isolated extremity injuries.

5.6.7 Indication for use of a traction splint include mechanism of injury resulting in painful, swollen deformity mid thigh with no fracture/dislocation of the lower leg or joint. The affected leg may also appear to be shortened or externally rotated.

5.6.8 Due to the considerable force necessary to fracture the femur, always consider possible cervical spine injury. In addition, large blood vessels near the femur may be compromised resulting in life threatening hemorrhage with these types of injuries. Appropriately assessing the patient's condition, administering oxygen and treating for shock is critical.

5.6.9 The use of a mechanical traction device is contraindicated if there is a pelvic, hip or knee injury, or an avulsion or partial amputation to the extremity. An injury involving the lower third of the leg (i.e. fractured or dislocated ankle), which would interfere with the ankle hitch would also be a contraindication.

5.10 Officers should research and obtain correct answers for questions participants ask during the drill session.

5.11 Officers should review attached timeline prior to conducting drill.

5.12 Officers should ensure that crews restock any equipment utilized and that they are in compliance with Part 800 procedures prior to returning to service.

6. REFERENCES

NYC REMAC Basic Life Support Protocols, July 2010 revision

NYC REMAC Advanced Life Support Protocols, July 2010 revision

NYS DOH Bureau of EMS Practical skill sheets

NYS DOH Bureau of EMS Pre-Hospital Care Provider Student Reference Guide

AAOS, Emergency Care and Transportation of the Sick and Injured, 9th Edition

FDNY EMS October 2008 CME Journal

TIMELINE

Task	Materials	Skill	Video &/or Time	Responsibilities
Prepare skills area and gather equipment	DVD player, gloves, medium(36") and short (16") rigid splints, cravats, multi traumas, 4x4s and 8x10s dressings for padding, roller gauze, traction splint with ankle hitch.	None	4 min	Officer and Crew(s)
Didactic and video presentation. (Intro)	Drill notes and DVD Video	None	4 min	Officer
Fracture management of a Radius / Ulna	Gloves, 1 short (16") rigid splint, cravats, roller gauze, 4x4s and/or 8x10s dressings for padding.	Crew(s) to demonstrate appropriate technique in order to successfully manage a suspected radius/ulna fracture. (6 minutes each member)	16 min	Officer to present radius/ulna fracture scenario and evaluate using skill sheet.

Task	Materials	Skill	Video &/or Time	Responsibilities
Fracture management of a Tibia/ Fibula	Gloves, 2 medium (36") rigid splints, cravats, multi traumas, and 8x10s for padding.	Crew(s) to demonstrate appropriate technique in order to manage a suspected tibia/fibula fracture. (6 minutes each crew member)	16 min	Officer to present tibia/fibula fracture scenario and evaluate using skill sheet.
Management of a mid-shaft femur fracture	Gloves, traction splint with ankle hitch, 8x10 for padding	Crew(s) to demonstrate appropriate technique in order to manage a suspected mid-shaft femur fracture. (6 min each crew member)	16 min	Officer to present mid-shaft femur fracture scenario and evaluate using skill sheet.
DISCUSSION AND CRITIQUE	RESTOCK EQUIPMENT	None	4 min	Officer and Crews

FRACTURED RADIUS / ULNA SCENARIO

You respond to an Injury. The scene size up and initial assessment have been completed and no critical conditions have been found. Your patient is a 19 y/o male sitting on the sidewalk complaining of severe pain to his right forearm. He states he was skateboarding and while attempting to do a "gnarly" trick he fell and struck his arm against a metal pole. During the focused assessment a closed, non-angulated injury of the right forearm (radius/ulna) was identified.

SKILL EVALUATION CHECKLIST (Radius/Ulna Fracture)

CREW ACTIONS:	FACILITATOR RESPONSE / ACTIONS:
☐ TAKES BODY SUBSTANCE ISOLATION PRECAUTIONS	*GLOVES ARE SUFFICIENT*
☐ DIRECTS APPLICATION OF MANUAL STABILIZATION OF THE INJURY	*PULSES ARE PRESENT. MOTOR AND SENSORY FUNCTIONS ARE ADEQUATE.*
☐ ASSESSES PULSE, MOTOR AND SENSORY FUNCTION IN THE INJURED EXTREMITY	*FOR RADIUS/ULNA FRACTURE, ONE 16" RIGID SPLINT SHOULD BE USED.*
☐ MEASURES FOR APPROPRIATE SIZE SPLINT	*THE SPLINT SHOULD BE APPLIED WITH PADDED SIDE DIRECTLY ON EXTREMITY.*
☐ APPLIES SPLINT WITHOUT EXCESSIVE MOVEMENT OF EXTREMITY	*THREE CRAVATS SHOULD BE UTILIZES TO SECURE SPLINT TO EXTREMITY*
☐ UTILIZES CRAVATS TO IMMOBILIZE THE JOINT ABOVE AND BELOW THE INJURY	*ADDITIONAL CRAVATS SHOULD BE UTILIZED TO SUPPORT THE EXTREMITY AND SECURE IT TO THE BODY FURTHER IMMOBILZING THE EXTREMITY. THIS IS ACCOMPLISHED WITH A SLING AND SWATHE*
☐ UTILIZES CRAVATS AS A SLING AND SWATHE TO SECURE EXTREMITY TO BODY	
☐ IMMOBILIZES THE HAND IN THE POSITION OF FUNCTION	*ROLLER GAUZE SHOULD BE USED TO MAINTAIN HAND IN THE POSITION OF FUNCTION*
☐ REASSESSES PULSE, MOTOR, AND SENSORY FUNCTION OF THE INJURED EXTREMITY	*PULSE MOTOR AND SENSORY ARE PRESENT AND NORMAL*
☐ RESCUERS DID NOT GROSSLY MOVE THE INJURED EXTREMITY	
☐ **BLS**: COLD PACK APPLICATION AND REQUESTING ALS IS CONSIDERED FOR THE TREATMENT OF SEVERE PAIN	*PROPER MANAGEMENT OF A FRACTURE INCLUDES APPROPRIATELY IMMOBILIZING THE EXTREMITY AND TREATING SEVERE PAIN*
☐ **ALS**: COLD PACK APPLICATION AND ADMINISTERING MORPHINE SULFATE UNDER STANDING ORDERS IS CONSIDERED TO TREAT SEVERE PAIN	***FACILITATOR NOTE:*** *(SPECIAL CONSIDERATIONS)*
☐ RESCUER IS ABLE TO IDENTIFY SPECIAL CONSIDERATIONS WHEN ASSESSING AND TREATING ANGULATED LONG BONE FRACTURE	*ANGULATED LONG BONE FRACTURES AND CYANOTIC OR PULSELESS EXTREMITIES MAY BE STRAIGHTENED INTO A SPLINTABLE POSITION USING GENTLE TRACTION UNLESS RESISTANCE IS FELT.*
☐ UNDERSTANDS WHEN APPROPRIATE TO ATTEMPT TO STRAIGHTEN AN ANGULATED LONG BONE FRACTURE	*ANGULATED JOINT INJURIES SHOULD BE SPLINTED IN THE POSITION FOUND UNLESS IT CAN'T EFFICTIVELY BE IMMOBILZED IN ITS POSITION.*
☐ UNDERSTANDS SPECIAL CONSIDERATIONS FOR ANGULATED JOINT INJURIES	

NAME:_____ **SHIELD #** _____ **RANK** _____

FACILITATOR: _____ **STATION:**_____

FRACTURED TIBIA/FIBULA SCENARIO

You respond to an Injury. The scene size up and initial assessment have been completed and no critical conditions have been found. Your patient is a 29 y/o female sitting on the sidewalk complaining of severe pain to her left lower leg. She states he was trying to get on the bus and while attempting to step into it she slipped and landed "wrong" on her leg and heard a "snap". During the focused assessment a closed, non-angulated injury of the left lower leg (tibia/fibula) was identified.

SKILL EVALUATION CHECKLIST (Tibia/Fibula Fracture)

CREW ACTIONS:	FACILITATOR RESPONSE / ACTIONS:
☐ TAKES BODY SUBSTANCE ISOLATION PRECAUTIONS	*GLOVES ARE SUFFICIENT*
☐ DIRECTS APPLICATION OF MANUAL STABILIZATION OF THE INJURY	*PULSES ARE PRESENT. MOTOR AND SENSORY FUNCTIONS ARE ADEQUATE.*
☐ ASSESSES PULSE, MOTOR AND SENSORY FUNCTION IN THE INJURED EXTREMITY	*FOR TIBIA/FIBULA FRACTURE, TWO 36" RIGID SPLINTS SHOULD BE USED.*
☐ MEASURES FOR APPROPRIATE SIZE SPLINTS	
☐ APPLIES SPLINTS WITHOUT EXCESSIVE MOVEMENT OF EXTREMITY	*THE SPLINT SHOULD BE APPLIED WITH PADDED SIDES DIRECTLY ON EXTREMITY.*
☐ UTILIZES CRAVATS TO IMMOBILIZE THE JOINT ABOVE AND BELOW THE INJURY	*FOUR CRAVATS SHOULD BE UTILIZES TO SECURE SPLINTS TO EXTREMITY.*
☐ SECURES THE ENTIRE INJURED EXTREMITY	
☐ IMMOBILIZES THE FOOT IN THE POSITION OF FUNCTION	*PULSE MOTOR AND SENSORY FUNCTIONS ARE PRESENT AND NORMAL.*
☐ REASSESSES PULSE, MOTOR AND SENSORY FUNCTION IN THE INJURED EXTREMITY	
☐ RESCUERS DID NOT GROSSLY MOVE THE INJURED EXTREMITY	*PROPER MANAGEMENT OF A FRACTURE INCLUDES APPROPRIATELY IMMOBILIZING THE EXTREMITY AND TREATING SEVERE PAIN*
☐ **BLS**: COLD PACK APPLICATION AND REQUESTING ALS IS CONSIDERED FOR THE TREATMENT OF SEVERE PAIN	
☐ **ALS**: COLD PACK APPLICATION AND ADMINISTERING MORPHINE SULFATE UNDER STANDING ORDERS IS CONSIDERED TO TREAT SEVERE PAIN	***FACILITATOR NOTE:*** *(SPECIAL CONSIDERATIONS)*
☐ RESCUER IS ABLE TO IDENTIFY SPECIAL CONSIDERATIONS WHEN ASSESSING AND TREATING ANGULATED LONG BONE FRACTURE	*ANGULATED LONG BONE FRACTURES AND CYANOTIC OR PULSELESS EXTREMITIES MAY BE STRAIGHTENED INTO A SPLINTABLE POSITION USING GENTLE TRACTION UNLESS RESISTANCE IS FELT.*
☐ UNDERSTANDS WHEN APPROPRIATE TO ATTEMPT TO STRAIGHTEN AN ANGULATED LONG BONE FRACTURE	*ANGULATED JOINT INJURIES SHOULD BE SPLINTED IN THE POSITION FOUND UNLESS IT CAN'T EFFICTIVELY BE IMMOBILZED IN ITS POSITION.*
☐ UNDERSTANDS SPECIAL CONSIDERATIONS FOR ANGULATED JOINT INJURIES	

NAME:_____ SHIELD # _____ RANK _____

FACILITATOR: _____ STATION:_____

Mid-shaft FEMUR FRACTURE SCENARIO

You respond to an Injury. The scene size up and initial assessment have been completed and no critical conditions have been found. Your patient is a 34 y/o male lying on the grass complaining of severe pain to right leg. He states while playing soccer, he collided with an opponent. They both fell to the ground and the opponent landed directly on his right thigh. During the focused assessment a closed, non-angulated injury of the right thigh (mid-shaft femur) was identified.

SKILL EVALUATION CHECKLIST (Mid-Shaft Femur Fracture)

CREW ACTIONS:	FACILITATOR RESPONSE / ACTIONS:
☐ TAKES BODY SUBSTANCE ISOLATION PRECAUTIONS	GLOVES ARE SUFFICIENT.
☐ VERBALIZES THE NEED TO CONSIDER OXYGEN THERAPY	FACILITATOR MAY ACT AS ASSISSTANT IF NEEDED.
☐ DIRECTS APPLICATION OF MANUAL STABILIZATION OF THE INJURY	PULSES ARE PRESENT. MOTOR AND SENSORY FUNCTIONS ARE ADEQUATE.
☐ ASSESSES PULSE, MOTOR AND SENSORY FUNCTION IN THE INJURED EXTREMITY	RESCUER SHOULD DIRECT ASSISSTANT TO APPLY AND MAINTAIN MANUAL TRACTION OF THE INJURED EXTREMITY UNTIL DIRECTED TO STOP.
☐ DIRECTS APPLICATION OF MANUAL TRACTION	THE SPLINT SHOULD BE MEASURED AGAINST THE NON INJURED LEG.
☐ MEASURES, PREPARES AND ADJUSTS SPLINT TO PROPER LENGTH	THE RESCUER SHOULD DIRECT THE ASSISSTANT TO ELEVATE THE LEG SLIGHTLY TO FACILITATE SLIDDING OF THE SPLINT UNDER THE INJURED LEG UP TO THE ISCHAL TUBEROSITY.
☐ APPLIES SPLINT WITHOUT EXCESSIVE MOVEMENT OF TO THE INJURED EXTREMITY	THE ISCHIAL STRAP SHOULD BE APPLIED WITH PADDING FOR COMFORT. IT SHOULD BE TIGHT BUT NOT RESTRICTIVE.
☐ APPLIES THE PROXIMAL SECURING DEVICE (ISCHIAL STRAP)	THE HEEL STAND MAY BE ELEVATED AT THIS POINT TO FACILITATE THE APPLICATION OF MECHANICAL TRACTION. THE MECHANICAL TRACTION STRAP IS TAKEN OVER THE TOP OF THE RATCHET DEVICE AND THE S-HOOK OF THE STRAP IS ATTCHED TO THE ANKLE HITCH. MECHANICAL TRACTION SHOULD BE APPLIED UNTIL RELIEF IS FELT BY THE PATIENT. **(NOTE: WHILE PERFORMING SKILL, ENSURE RESCUER DOES NOT TO APPLY EXCESSIVE MECHANICAL TRACTION TO "VICTIM").**
☐ APPLIES THE DISTAL SECURING DEVICE (ANKLE HITCH)	
☐ APPLIES MECHANICAL TRACTION	
☐ POSITIONS AND SECURES THE SUPPORT STRAPS	THE RESCUER SHOULD NOW BEGIN TO APPLY THE SUPPORT STRAPS. BEGINNING WITH THE LEG SUPPORT STRAP AT THE TOP OF THE LEG, THIS SUPPORT STRAP SHOULD BE PLACED OVER THE ISCHIAL STRAP. THE NEXT STRAP SHOULD BE PLACED BELOW THE FRACTURE SITE BUT ABOVE THE KNEE. THE THIRD STRAP SHOULD BE PLACED JUST BELOW THE KNEE. THE FINAL STRAP SHOULD BE PLACED OVER THE ANKLE HITCH. AT THIS POINT, THE RESCUER CAN DIRECT THE ASSISSTANT TO RELEASE MANUAL TRACTION.
☐ RE-EVALUATES PROXIMAL AND DISTAL SECURING DEVICES	
☐ REASSESSES PULSE, MOTOR AND SENSORY FUNCTION IN THE INJURED EXTREMITY	PULSE, MOTOR AND SENSORY FUNCTIONS ARE PRESENT AND NORMAL.
☐ VERBALIZES APPROPRIATE PREPARATION OF PATIENT FOR TRANSPORT BY SECURING THE TORSO TO THE LONG BOARD IN ORDER TO IMMOBILIZE THE HIP AND SECURING THE SPLINT TO THE LONG BOARD TO PREVEMT MOVEMENT OF THE SPLINT	THE PATIENT SHOULD BE SECURED TO A LONG BOARD.
☐ TRACTION WAS MAINTAINED THROUGHOUT APPLICATION OF THE SPLINT AND THE FOOT WAS NOT EXCESSIVELY ROTATED OR EXTENDED DURING OR AFTER APPLICATION OF SPLINT	
☐ ISCHIAL STRAP WAS SECURED PRIOR TO APPLYING MECHANICAL TRACTION	**CONTRAINDICATIONS** FOR USING A TRACTION SPLINT INCLUDE A PELVIC, HIP OR KNEE INJURY OR AN AVULSION OR PARTIAL AMPUTATION TO THE EXTREMITY. ALSO AN INJURY INVOLVING THE LOWER THIRD OF THE LEG THAT WOULD INTERFERE WITH THE APPLICATION OF THE ANKLE HITCH.
☐ APPLIED MECHANICAL TRACTION BEFORE SECURING THE LEG TO SPLINT WITH SUPPORT STRAPS	
☐ VERBALIZES CONTRAINDICATONS FOR THE USE OF THE TRACTION SPLINT	

NAME:_____ SHIELD # _____ RANK _____

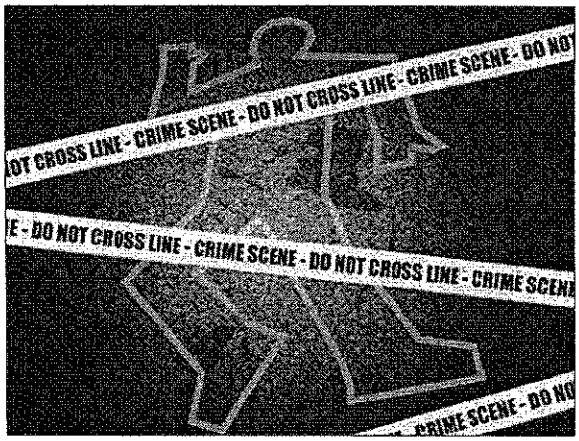
FACILITATOR: _____ STATION:_____

FACILITATOR NOTES:

FDNY–EMS CME JOURNAL 2011_J03
CRIME SCENE MANAGEMENT

The past several journal articles have covered the topic of trauma.
This month's article will touch upon the subject of crime scene management and forensic medicine.

I. INTRODUCTION



Unfortunately, a significant percentage of our trauma patients are intentionally injured. In addition to shootings and stabbings, patients may be victims of assaults with fists or blunt objects, sexual assaults, strangulations, or intentional vehicle collisions. Even motor vehicle accidents are considered a crime scene if one of the drivers is thought to be under the influence of alcohol or other intoxicants or had been found to be driving recklessly. In addition to managing these patients, EMS personnel also have to interact with law enforcement personnel. Although both groups share the goal of preserving life, we occasionally find our duties at a crime scene coming into conflict. Law enforcement officials, who maintain authority at a crime scene, are concerned about preserving evidence or bringing a perpetrator to justice while the primary focus for EMS providers is assessing a victim (or perpetrator) for signs of life or viability and providing emergency medical care. When operating at crime scenes, as we so often do, we must bear in mind these parallel goals and do our best to preserve evidence when possible. Patient care should never be compromised in order to protect a crime scene or evidence. Instead, as challenging as it may be, excellent patient care should be provided while trying to best preserve evidence.

II. CRIME SCENE OPERATIONS

Strategies to ensure crime scene preservation include having all personnel use a single path upon entering and leaving the scene, limiting the number of personnel entering the scene, and having all non-essential personnel remain outside the crime scene until their assistance is needed. Police investigators believe that everyone who enters a crime scene brings some type of evidence to the scene and unknowingly removes some evidence from the scene. Proper handling of a patient's clothing may preserve valuable evidence. If possible avoid cutting through cloth damaged by bullet or knife wounds. If available, place the clothing in a paper bag instead of a plastic bag.

If a patient has obvious signs of death (mortal injury, severe dependent lividity, rigor-mortis) refrain further moving or disturbing of the body. A hanging body should not be cut down or a bound victim untied. If care had been initiated and terminated at the scene, as it is our current policy, all expendable patient care equipment (e.g. ET tubes, IV lines, defibrillator pads) must be left in place. Do not further disturb the scene such as using the sink, telephone (unless an emergency) or removing any items (e.g. bullet casings).

Proper documentation, as it should always be, is extremely important. If a case goes to trial you will be called to testify on your role at the crime scene. EMS providers are not pathologists or forensics specialists. You will be questioned on what you observed and the patient care you provided. Remember, if it was not documented then it can be claimed that it never happened. The documentation must be legible, accurate, and concise. Only facts should be documented and not the "truths" as you perceive them. For example, a fact would be that a patient has an altered mental status whereas a "truth" would be that the patient was under the influence of a chemical substance. It could be that they suffered a traumatic brain injury that made them appear to be under the influence of a chemical substance. The position of the patient should be noted, and record in detail any wounds including the number, location, size, shape, color, and any other characteristics. Do not give opinions such as "entry" or "exit" wounds (to be further discussed below). In addition, record any procedures including attempts and location.

Forensic evidence is the application of science and medical knowledge in determining the cause of an injury and/or death in a victim of crime. Television programs such as CSI have brought this specialty to the forefront. If life only imitated art, and if only it were that simple, to be able to solve multiple cases within an hour's time-frame (including commercials)!

Determining the cause of death is difficult enough, but attempting to preserve and collect medical evidence while providing patient care can be extremely challenging. Forensic medicine, in cases of death, is necessary to determine the cause of death (gunshot wounds, stabbings, accidents, suicides, homicides), as well as time of injury to time of death. Many parties and agencies are interested in this information – law enforcement officials, family members, prosecutors, insurance companies.

The collection of medical evidence is vital in forensic medicine to help in determining the cause of death, injury, or assault. Was the injury self inflicted or caused by another? Was the alleged perpetrator right-handed or left-

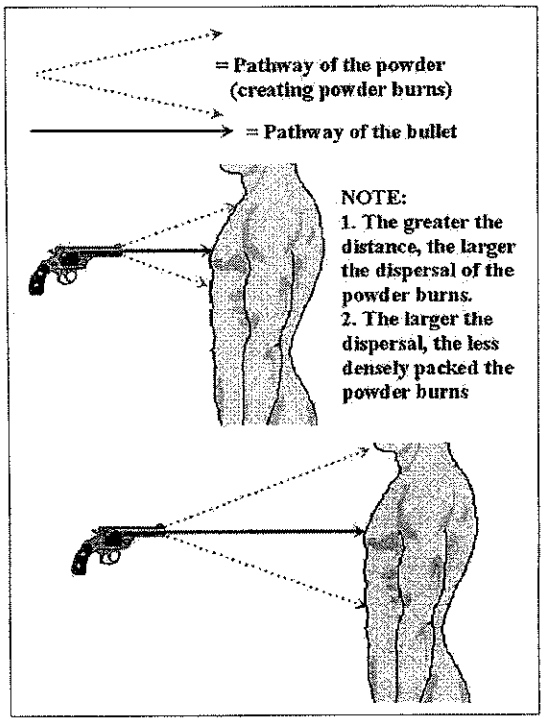
handed? Was there one assailant or multiple assailants? Was the patient shot from close range or from a distance? Was this a suicide or a homicide? These are just some of the questions that forensic medicine specialists may be able to answer based on forensic medical evidence.

Our primary goal and role in pre-hospital care is to provide the best possible medical care in any given circumstance. We are taught to "not disrupt and disturb the 'crime scene' too much." While we must always focus on our primary objective, it is important to be aware of law enforcement's concerns and do our best to assist them in meeting their objectives. What we do at a crime scene may have a tremendous outcome on what ultimately happens to the patient and beyond.

III. INJURY PATTERNS

1. Gunshot Wounds

It is estimated in the literature that there are approximately 250,000 cases of gunshot wounds in the United States annually. When providing care for these victims of penetrating trauma, we should carefully document the number and location of wounds. In the past, it has been taught that entrance wounds are smaller than exit wounds, but more recently, the literature has reported that this may no longer be accurate. In truth, it is often extremely difficult to determine entrance versus exit. Because of this, we should document just the location and number of wounds, and leave determinations of direction of the projectile to forensic medical specialists.



Wound ballistics is essentially the effects of a projectile striking and penetrating the body. These effects are determined by the shape, size, and weight of a bullet. Its velocity, deformation capability upon tissue impact, path through the body, and final resting place also determine the effects of the projectile on the body. The distance from which the weapon was fired similarly plays a role in the type of injuries caused. For example, a contact wound where the weapon is fired at close range, essentially in contact with the body surface, will have different characteristics such as blackened wound edges from the soot of the discharge or a stellate or triangular shaped laceration. A more intermediate distance gun shot wound may have "tattooing" or "stippling" due to unburned gunpowder imbedding in the skin. Long distance wounds may have an "abrasion collar" which indicates that the injury was caused by the penetration of the bullet and not by thermal changes due to closer ranges.

2. Blunt Traumatic Injuries

Blunt trauma may cause abrasions, lacerations, or contusions outwardly visible when examining the skin. Obviously, there may be further internal injuries such as bony involvement not visible on external examination. Intra-abdominal and other internal injuries may not be evident immediately, and patients may later develop signs of hypovolemia and shock. All visible injuries should be documented appropriately and treated accordingly – direct pressure for any bleeding sites, immobilization for any suspected fracture sites. Often times, there may be "bite" marks as well evident on the skin, which should also be treated and documented accordingly. From the forensic medicine perspective, these injuries may be important. Was this "bite" from an animal or from a human? If human, was it from an adult or from a child?

3. Sharp Force Trauma

There are essentially two classes of sharp force injuries – incised (where there is a drawing motion causing longer wounds rather than deep) and stabbed (puncture type of injury that usually is deeper than wide). Sharp force injury wounds tend to be "cleaner" than blunt force injuries which tend to produce more "jagged" wounds. Depending on the type of wound observed, from the forensic medicine perspective, the type of weapon may be determined. For example, a single penetrating circular wound may indicate an ice pick. From our pre-hospital perspective, all penetrating wounds should be treated appropriately and accurate documentation should be conducted as always.

IV. SPECIAL CIRCUMSTANCES

1. Sexual Assault

All 911 receiving emergency departments are able to provide appropriate general medical care to any patient that walks into their emergency department. However, since 2008 one category of specialty referral facilities, the Sexual Assault Forensic Examiner (SAFE) Program sites, is better able to manage these victims of crime. Not only do SAFE centers have better resources to provide appropriate medical care for sexual assault victims, in addition they have specially trained teams that include physicians, nurses and social workers to help the patients through this emotionally traumatic time. The medical teams are specifically trained in collecting forensic evidence, such as DNA samples and are often called in to court to provide testimony at time of trial. When evidence is collected improperly, advanced forensic techniques such as DNA analysis leading to the successful prosecution of a perpetrator may not be able to be employed. It is unfortunate that all too often evidence can be thrown out of court due to the improper collection of evidence, and we should make use of SAFE centers to care for these patients and appropriately collect evidence whenever possible.

From the pre-hospital perspective, providers should identify any life threats and treat and transport accordingly (trauma center if those criteria are met), or encourage transport to emergency departments with SAFE Programs if the patient is deemed to be stable. As with all other cases, appropriate treatment per protocols should be provided and accurate and appropriate documentation should be conducted. As of the writing of this article, there are 19 such identified emergency departments with SAFE Programs throughout the 5 Boroughs. These facilities allow for expert medical management, collection of evidence and testimony through the 24-hour availability of trained sexual assault examiners, specialized equipment to detect and document injury, dedicated examination and shower rooms, trained advocates and full-time social workers for follow-up counseling services and emotional support.

2. Strangulation

Strangulation is a form of asphyxia (lack of oxygen) characterized by the closure of blood vessels and/or air passages of the neck as a result of external pressure on the neck. It can induce loss of consciousness within seconds and death within minutes. Although there is a technical difference between choking (obstruction of an airway) and strangulation, these terms are often used interchangeably in cases of domestic violence and assault.

On November 11, 2010, New York State Penal Law 10.00(9) for assault was amended to add Article 121, which specifically addressed strangulation as a separate crime under assault. Until this change, strangulation in and of itself was not considered a crime and had to be attached to an assault charge, which made prosecution extremely difficult. With this change, law enforcement officials and prosecutors can now bring charges upon assailants solely on this act. This means that our pre-hospital documentation becomes even so much more important when these potential cases go to trial. As with any other injuries, appropriate treatment and documentation must take place.

Unfortunately, the signs and symptoms of strangulation may often be subtle; they are varied and may include those listed in Table 1. It is important to note that there may not be a report of strangulation or assault due to embarrassment or the intense emotions associated with domestic violence situations. Pre-hospital care providers must be vigilant for these potential clues to strangulation and maintain a high index of suspicion.

Table 1.

SIGNS AND SYMPTOMS OF STRANGULATION
Difficulty breathing
Hyperventilation
Raspy or hoarse voice
Difficulty swallowing
Drooling
Scratches or redness on the neck
Flushing of the face
Bloody conjunctiva (Petechial Hemorrhages)
Epistaxis
Lightheadedness
Loss of consciousness

V. CONCLUSION

Whenever trauma is discussed, forensic medicine should also be touched upon. Our primary goal is to provide the highest level of medical care possible. However, it is clear that our patient care documentation will often become crucial from the forensic medicine perspective. Many of you will be called upon to testify as to what you observed and what you documented as you treated your patients. In the pre-hospital realm, we may often be limited as to what we may document due to the inability to make definitive diagnoses without additional testing. Trying to preserve forensic evidence while providing medical care can be extremely challenging. As long as each member adheres to treatment protocols, crime scene operation SOG's, and standard documentation strategies, you should be able to meet any challenge from the forensic medicine perspective.

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CME JOURNAL 2011_J0 03: CRIME SCENE MANAGEMENT QUIZ

1. ***All of the following techniques should be utilized at a crime scene <u>except</u>:***
   A. having all personnel use a single path upon entry and leaving the scene
   B. only allowing the highest ranking EMS officer on scene
   C. limiting the number of personnel entering the scene
   D. having all non-essential personnel remain outside the crime scene until their assistance is needed

2. ***If available, any clothing from a crime should be placed into:***
   A. plastic bags
   B. paper bags

3. ***If care has been initiated and terminated at the scene, current policy dictates that the following equipment be left in place:***
   A. ET tubes
   B. IV lines
   C. Defibrillation pads
   D. All of the above

4. ***Patient documentation should be all of the following <u>except</u>:***
   A. legible
   B. accurate
   C. concise
   D. written in blue ink

5. ***Only _____ should be documented and not the _____.***
   A. facts, "truths" as you perceive them
   B. "truths" as you perceive them, facts

6. ***Forensic Medicine is:***
   A. the facts and "truths" as you perceive them at a crime scene
   B. the science of lawyers prosecuting civil cases
   C. the application of science and medical knowledge in determining the cause of an injury and/or death in a victim of crime
   D. random guessing through trial and error

7. ***Our primary goal as pre-hospital care providers at a crime scene is:***
   A. to defer to law enforcement officials as to patient care
   B. to preserve evidence first
   C. to provide the best possible medical care
   D. to document events leading up to the injury

8. ***Which of the following is <u>not</u> considered a class of sharp force injury?***
   A. incised
   B. lacerated
   C. stabbed

9. ***SAFE Centers provide all of the following <u>except</u>:***
   A. expert medical management by trained sexual assault examiners
   B. expert collection of evidence and testimony
   C. 24 hour home security services
   D. trained advocates and full time social workers for follow up counseling services and emotional support

10. ***All of the following are signs and symptoms of strangulation <u>except</u>:***
    A. difficulty breathing
    B. raspy or hoarse voice
    C. drooling
    D. flushing of the abdomen
    E. flushing of the face