

COVER PAGE FOR

The PDF File offered by Bryan E. Bledsoe, DO, FACEP
of a SLIDE SHOW he created, entitled,
“Issues in Patient Restraint”

What follows is the slide show presented by Dr. Bryan E. Bledsoe at the annual Clinical Conference on Prehospital Emergency Care (“ClinCon”) held in Orlando, Florida, on **JULY 10-13, 2003**.

The **111 Slides** were originally obtained by Ms. Charly D. Miller from the Internet (**<http://www.bryanbledsoe.com/Patient%20Restraint.pdf>**) and saved to her computer on 7/29/2004.

As of 12/17/05, the above address no longer yielded the file.

On 12/19/05 the file was discovered at:

<http://www.bryanbledsoe.com/pdf/handouts/Patient%20Restraint.pdf>

On 12/19/05 the file was also discovered at:

http://www.femf.org/education/2003Clincon/Bledsoe%20Patient%20Restraint%20syllabus_files/frame.htm

As of August 13, 2007, the above link was **STILL ACTIVE**.

Issues in Patient Restraint

Bryan Bledsoe, DO, FACEP

Definitions

- *Delirium*

- a mental disturbance marked by illusions, hallucinations, short unsystematized delusions, cerebral excitement, physical restlessness and incoherence and having a comparatively short course. Delirium usually reflects a toxic state.

Definitions

- *Delirium*

- Causes:

- General medical condition
- Substance-induced delirium
- Multiple etiologies
- Other causes

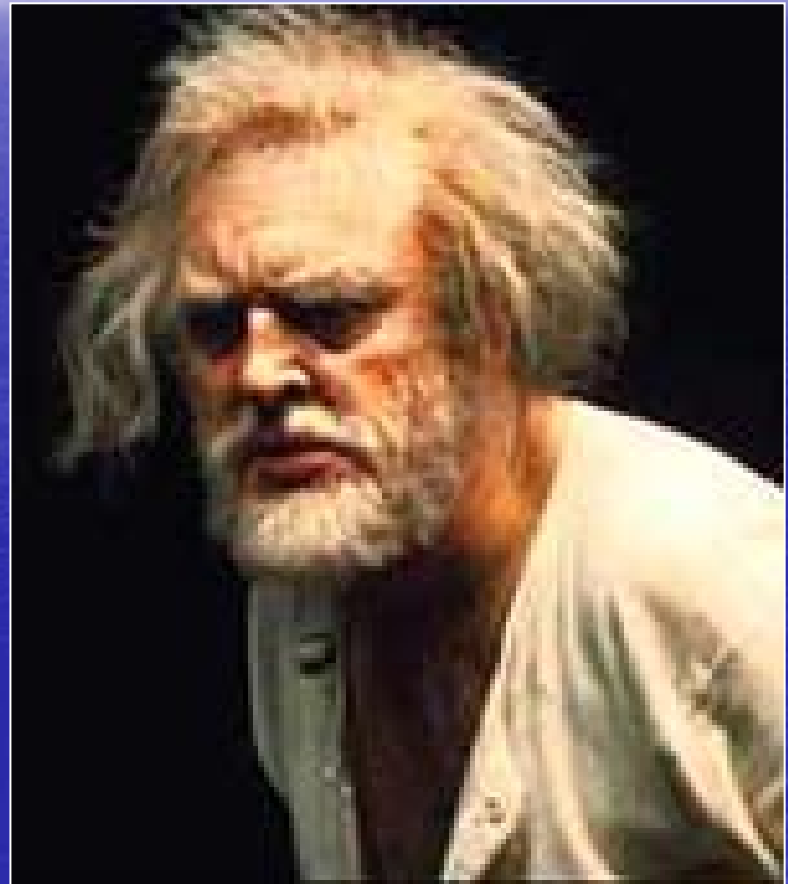


Definitions

- *Excited Delirium:*
 - A delirium is characterized by a severe disturbance in the level of consciousness and a change in mental status over a relatively short period of time, manifested by mental and physiological arousal, agitation, hostility and heightened sympathetic stimulation

Definitions

- *Dementia*
 - Organic loss of intellectual function, usually chronic.



Definitions

- *Psychosis*
 - A general term for any major mental disorder of organic and/or emotional origin characterized by derangement of the personality and loss of contact with reality, often with delusions, hallucinations, or illusions.



Definitions

- *Positional asphyxia*
 - Asphyxia that occurs from positioning of the body (i.e., hyperflexion of the neck, prone positioning) that interferes with the airway or bellows function of the respiratory muscles. Also called postural asphyxia.

Definitions

- *Restraint asphyxia*
 - Asphyxia occurring during the process of subduing and restraining an individual. Often causes an interference with the bellows action of the chest inhibiting gas exchange thus resulting in hypoxia.

Patient Restraint

- What is “patient restraint?”
 - The use of a physical or mechanical device or chemical to involuntarily restrain the movement of the whole or a portion of a patient’s body for the reason of controlling physical activities in order to protect the patient or others from injury.

Patient Restraint

- **When is patient restraint indicated?**
 - When a person exhibits a behavior or psychological syndrome that is associated with a significantly increased risk of the person suffering death, injury, pain, or disability; or causing death, injury, pain or disability to another person.

Patient Restraint through History



- Prior to the development of the major tranquilizers, most patients with delirium, dementia, or psychosis were restrained in various fashions.

Patient Restraint Through History

- Straight jackets and padded rooms were common.



Patient Restraint Through History



- Mark Twain's youngest daughter Jean spent most of her life institutionalized because of epilepsy.

Patient Restraint Through History



- Psychosurgery had some fleeting success in managing psychosis.

Patient Restraint Through History

- Development of the major tranquilizers offered significant improvements and allowed some people to finally be deinstitutionalized.



Patient Restraint

- Today, some people must be restrained in order to prevent them from harming themselves or others.
- Patient restraint is a significant decision that must be made by law enforcement personnel, EMS personnel, medical personnel, or a combination of these.

Physical Restraints



- Hand cuffs are among the most frequently used restraint system of law enforcement.

Physical Restraints

- Hogtying was a common mechanism for restraining patients where simpler measures were ineffective.
- Numerous deaths have been associated with hogtying patients.



Physical Restraints



- Hobble restraints are sometimes added if the handcuffs or other measures are ineffective.

Patient Restraint

- Most EMS systems do not carry any formalized patient restraint system.



The Literature

- Bell MD, Rao VJ, Wetli CV, Rodriguez RN. Positional asphyxia in adults: a series of 30 cases from the Dade and Broward County Florida Medical Examiner Offices from 1982-1990. *Am J Forensic Med Path.* 1992;13(2):101-107

The Literature

- Findings:
 - Patients found in position and asphyxia not due to restraint.
 - Average age=50.6 years.
 - Male:Female ratio=2:1. No racial or gender differences when compared to total ME population.
 - Chronic alcoholism or acute alcohol intoxication was a significant risk factor (average post-mortem ethanol = 0.240)
 - Signs of mechanical asphyxiation were found in 93% of cases.

The Literature

- Findings:
 - 43% of victims were found in restrictive position producing hyperflexion of the head and neck.
 - 2 deaths involved “Posey” vests and elderly patients.
 - Conclusion: Positional asphyxia as a cause of death should not be overlooked in the alcoholic who dies suddenly, has a “negative” autopsy, and variable levels of drugs and alcohol in the blood or urine.

The Literature

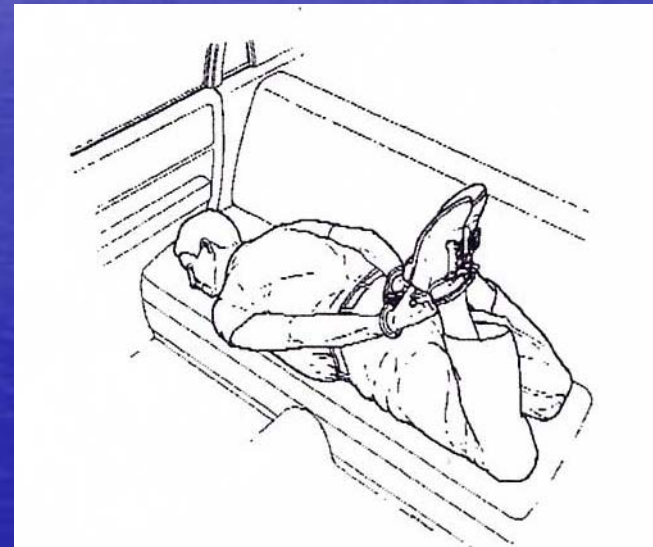
- Reay DT, Fligner CL, Stilwell AD, Arnold J. Positional asphyxia during law enforcement transport. *Am J Forensic Med Path.* 1992;13(2):90-97

The Literature

- Findings:
 - 3 cases of positional asphyxia occurring while victims were in prone position in the rear compartments of patrol cars.

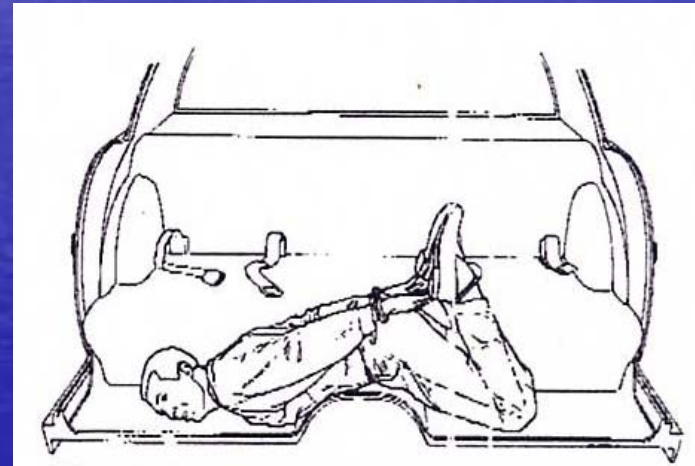
The Literature

- Case 1:
 - 24 y/o white man with pendulant abdomen
 - Psychiatric history
 - Violent arrest (fought PD, struck twice with night stick)
 - Handcuffed and hog tied and placed prone in patrol car
 - Dead after 5-7 minute ride to ED (for night stick wounds)
 - Autopsy relatively unremarkable
 - TOX: + lithium, caffeine
 - Death: Positional asphyxia



The Literature

- Case 2:
 - 28 y/o white man house sitting and drinking beer
 - Fight ensued and PD called
 - Violent arrest (ran, fought PD, struck with night sticks)
 - Handcuffed and hog tied and placed prone in patrol car
 - Fell into floor between seats.
 - 3 minutes later, breathing became “gurgly” and EMS summoned.
 - Autopsy showed deep right neck muscle hemorrhage, otherwise negative.
 - TOX: ETOH=0.320, +LSD, +THC
 - Death: Positional asphyxia



The Literature

- Case 3
 - 34 y/o black man
 - Long psychiatric history (schizophrenia) and who quit taking medicine
 - Began to behave in bizarre fashion and PD summoned
 - Violent arrest and scuffle (with PD blows to chest with fists)
 - Hog tied and placed in floor of patrol car (officer rode in back seat with patient)
 - Became quiet during 5-7 minute transport and dead upon arrival at jail.
 - Autopsy relatively unremarkable.
 - TOX: Negative
 - Death: Positional asphyxia

The Literature

- Conclusions:
 - Diagnosis of positional asphyxia should be considered when:
 - Circumstances surrounding death indicate a body position that could interfere with respiration
 - Historical information indicates “difficulty breathing” or unusual respiratory signs such as cyanosis, gurgling, gasping, or any physical manifestations that could be interpreted as respiratory distress
 - No catastrophic findings at autopsy
 - No fatal levels of drugs or substances are detected.

The Literature

- O'Halloran RL, Newman LV. Restraint asphyxiation in excited delirium. *Am J Forensic med Path.* 1993;14(4):289-295

The Literature

- Findings:
 - 11 cases of sudden death of men restrained in prone position by police officers.
 - 9 were hogtied, 1 was tied to hospital gurney, and 1 was manually held prone.
 - All were in excited delirious state (3 were psychotic, 8 from drugs [6 cocaine, 1 methamphetamine, 1 LSD])
 - 2 were shocked with stun guns

The Literature

- Findings:
 - Sudden death of people in a state of agitated delirium during prone restraint appears not to be uncommon.
 - Mechanism of death is sudden, fatal cardiac dysrhythmia or respiratory arrest
 - Factors:
 - Psychiatric or drug-induced state causes catecholamine stress on the heart
 - Hyperactivity coupled with struggling with PD and against restraints contributes to increases in oxygen demands
 - Hogtied position clearly impairs breathing in situations of high oxygen demand by impairing chest wall and diaphragmatic movement

The Literature

- Stratton SJ, Rogers C, Green K. Sudden death in individuals in hobble restraints during paramedic transport. *Ann Emerg Med.* 1995;25:710-712

The Literature

- Findings:
 - 2 cases of unexpected death in restrained, agitated individuals being transported by ALS ambulance.
 - Both patients placed in hobble restraints by law enforcement.

The Literature

- Case 1
 - 35 y/o agitated, combative man found rolling in the street.
 - Arrested and handcuffed with hands behind back.
 - Remained uncontrollable and placed in hobble restraints.
 - Placed in prone position on stretcher and transported with cardiac monitor attached.
 - During transport, pulse dropped from 135 to 60, then increased to 102, and then developed asystole.
 - Restraints removed, resuscitation attempted and failed.
 - Autopsy negative other than antecubital needle marks.
 - TOX: + amphetamine and methamphetamine
 - Death: Methamphetamine intoxication and restrained maneuvers for bizarre behavior.

The Literature

- Case 2
 - 30 y/o male who was riding his bicycle in and out of traffic
 - Stopped and arrested by police.
 - Fought police and placed into hobble restraints after other methods of restraint failed.
 - EMS summoned and patient placed in prone position.
 - Initially combative and paramedics unable to obtain vital signs.
 - Within 6 minutes, patient became unresponsive.
 - Restraints removed and resuscitation attempted and failed.
 - Autopsy revealed pulmonary edema and congestion, otherwise negative.
 - TOX: ETOH=0.100 + cocaine, + methamphetamine
 - Death: Positional asphyxia during restraint for agitated delirium

The Literature

- Findings:
 - Patients should be placed in supine or lateral position rather than prone.
 - If hobble restraints are used, allow slack for ventilatory movement of the chest wall.
 - Patient must be monitored closely.
 - EMS crew must have capability to immediately release the restraints and provide ALS.

The Literature

- Roeggla M, Wagner A, Mueliner M, et al. Cardiorespiratory consequences to hobble restraint. *Wien Klin Wochenschr.* 1997;109:359-361.

The Literature

- Findings:
 - Study of 6 healthy volunteers restrained with hobble restraints in upright and prone positions.
 - During hobble restraint in the prone position they found FVC dropped by 40%, end-tidal CO₂ increased by 15%, and the cardiac output increased by 37%.
 - Hobble restraints in the prone position leads to a dramatic impairment of hemodynamics and respiration
 - Upright position and frequent control of vital parameters are necessary to prevent possibly fatal outcome in persons in hobble restraints

The Literature

- Chan TC, Vilke GM, Neuman T, Clausen JL. Restraint position and positional asphyxia. *Ann Emerg Med.* 1997;30:578-586

The Literature

- Findings:
 - Experimental cross-over trial of healthy volunteers placed in “hobble” or “hogtie” restraints.
 - 15 healthy men (ages 18-40) underwent drug screening and pulmonary function testing.
 - 1st Phase: Exercised for 4 minutes and underwent PFT sitting, supine, prone and restraint positions.
 - 2nd Phase: Subjects underwent 2 exercise and 2 rest periods (seated for first rest period and restrained for second).

The Literature

- Findings:
 - ABGs, pulse and oximetry measured throughout.
 - Subjects placed in restraint exhibited a reduced pulmonary function pattern by PFT, but no evidence of hypoxia or hypercapnia was found.
 - Restraint position, by itself, was not associated with any clinically-relevant changes in respiratory or ventilatory function (decrease of 13%)
 - There is no evidence to suggest that hypoventilatory respiratory failure or asphyxiation occurs as a direct result of body restraint position in healthy, awake, non-intoxicated individuals.

The Literature

- Chan TC, Vilke GM, Neuman T. Reexamination of custody restraint position and positional asphyxia. *Am J Forensic Med Path.* 1998;19(3):201-205

The Literature

- Findings:
 - Collective review of literature on restraint and positional asphyxia.
 - Factors other than body positioning appear to be more important determinants for sudden, unexpected deaths in individuals in the hogtie custody restraint position.
 - Factors include: illicit drug use, physiologic stress, hyperactivity, hyperthermia, catechol hyperstimulation, and trauma from struggle.

The Literature

- Ross DL. Factors associated with excited delirium deaths in police custody. *Mod Pathol.* 1998;11(11):1127-1137

The Literature

- Findings:
 - Review of 61 cases of excited delirium where patient died in police custody.

SLIDE 47

Psychological	Physiologic	Physical
Paranoid	Tachycardia	Hypervigilance
Hallucinations	Hyperthermia	Extreme Strength
Grandiosity	Hypertension	Incoherent speech
Extreme agitation	Foaming of the mouth	Shouting
Fear	Mydriasis	Violent behavior
Fornication	Cardiac arrest	Bizarre behavior
Thought disorder	Seizures	Kicking/Thrashing
Dysphoric	Pulmonary congestion	Running/Hiding
	Chest pain	Threat to self/others
	Profuse sweating	Aggression
		High pain threshold

The Literature

- Findings:
 - Most common aggravating factor was abuse of cocaine and cocaine/alcohol.
 - Restraint equipment that controls a violent patient's legs independent of the wrists, such as a leg wrapping strap device, which allows the subject to be in an upright and seated position at the scene and during transport should be used.
 - The hogtie system should only be used judiciously and in situations when there is no alternative. The patient should be placed upright or rolled on his side quickly after restraint and vital signs monitored.

The Literature

- Hick JL, Smith SW, Lynch MT. Metabolic acidosis in restraint-associated cardiac arrest: a case series. *Acad Emerg Med.* 1999;6:239-243.

The Literature

- Findings:
 - Review of 5 cases (4 fatal) where cardiovascular collapse occurred in ED patients who were struggling despite maximum restraint techniques.
 - All were intoxicated (cocaine, benzoylecgonine [cocaine metabolite])
 - Profound metabolic acidosis was associated with cardiovascular collapse following exertion in a restrained position (pH ranges: 6.25-6.81)

The Literature

- Findings:
 - Avoiding the hobble restraint position and emphasizing side rather than prone positioning may eliminate some of the problems that contribute to the deaths.
 - Early EMS involvement may help to prevent in-custody deaths through use of chemical restraints and bicarbonate therapy.

The Literature

- Pollanen MS, Chiasson DA, Cairns JT, Young JC. Unexpected death related to restraint for excited delirium: a retrospective study of deaths in police custody. *CMAJ*. 1998;158:1603-7.

The Literature

- Findings:
 - Review of 21 Canadian cases of unexpected death in persons with excited delirium.
 - Deaths were all associated with restraint either with the person in the prone position or subject to pressure on the neck.
 - All lapsed into tranquility shortly after being restrained.

The Literature

- Findings:
 - 58% had psychiatric disorder
 - 38% had cocaine-induced psychosis
 - Restraint may contribute to the death of people in states of excited delirium.
 - Law enforcement personnel should bear in mind the potential for the unexpected death of people in excited states of delirium who are restrained prone or with a neck hold.

The Literature

- Schmidt P, Snowden T. The effects of positional restraint on heart rate and oxygen saturation. *J Emerg Med.* 1999;17(5):777-782.

The Literature

- Findings:
 - 18 healthy subjects (ages 21-42 years) were studied.
 - Resting heart rates and SpO₂ was measured.
 - Randomly assigned to seated unrestrained or hogtied position, with protocols switched after 15 minutes rest.
 - Phase 1: Each exercised until their heart rate was > 120 (124-150).

The Literature

- Findings:
 - Phase 2: Students paired with other student within 5 pounds of body weight and ran simulated police chase course.
 - Exercise intensity was high (pulse rates 175-212). At the end of the chase, the chaser was placed in the seated position and the chased was placed in the hogtied position.
 - The chased subject then struggled for 30 seconds and SpO₂ measured. Roles reversed and process repeated.

The Literature

- Findings:
 - Findings refute the premise that positional restraint alone produces physiological stress that places healthy persons at risk for sudden death.
 - Cocaine appears to be a common element in positional restraint deaths.
 - High levels of dopamine from cocaine may be a factor.

The Literature

- Stratton SJ, Rogers C, Brockett K, Gruzinski G. Factors associated with sudden death of individuals requiring restraint for excited delirium. *Am J Emerg Med.* 2001;19:187-191.

The Literature

- Findings:
 - Retrospective review of the LA County EMS and LA Coroner's records from 1992-1998.
 - 216 cases of excited delirium located.
 - 18 deaths reported
 - 20 cases of excited delirium witnessed by EMS personnel.
 - All had been hobble restrained.
 - 81% prone
 - 9% lateral
 - 10% undetermined

The Literature

- Findings:
 - Multiple factors associated with sudden death while restrained for excited delirium.
 - Excited delirium (100%)
 - Hobble restraint (100%)
 - Prone position (100%)
 - Forceful struggle against restraint (100%)
 - Positive stimulant use (78%)
 - Autopsy evidence of chronic disease (56%)
 - Obesity (56%)

The Literature

- The data do not support or refute the prone position while hobble restraint was independently associated with sudden death.

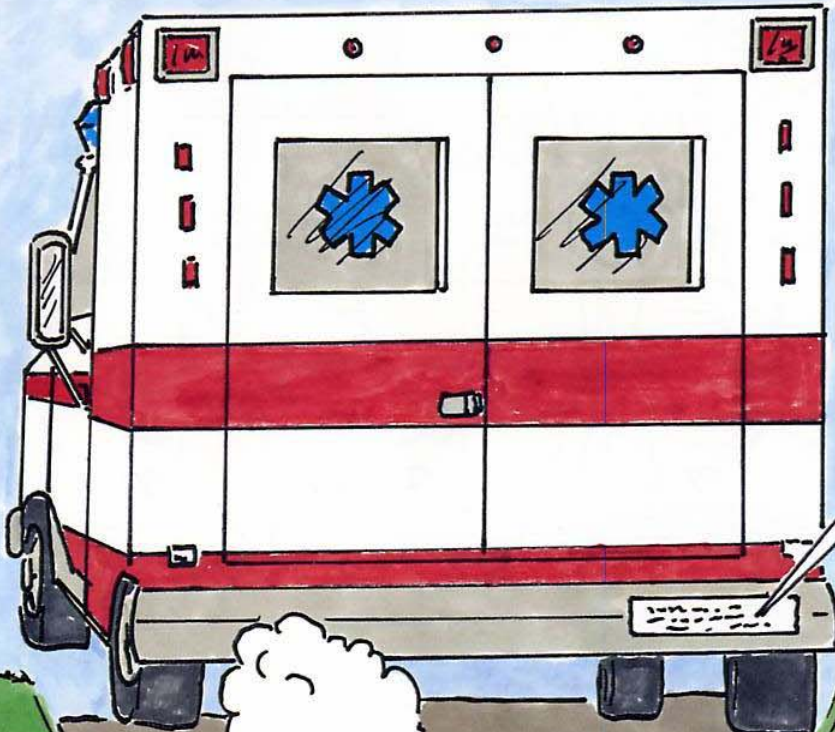
The Literature

- Position appears not to be significant factor in healthy patients.
- Patients with excited delirium at markedly increased risk for restraint asphyxia.
- Stimulants contribute to problem of restraint asphyxia.
- Prone position is best avoided.
- Hobble restraints are best avoided.
- Chronic alcoholism or alcohol intoxication puts patients at risk for positional asphyxia.

The Literature

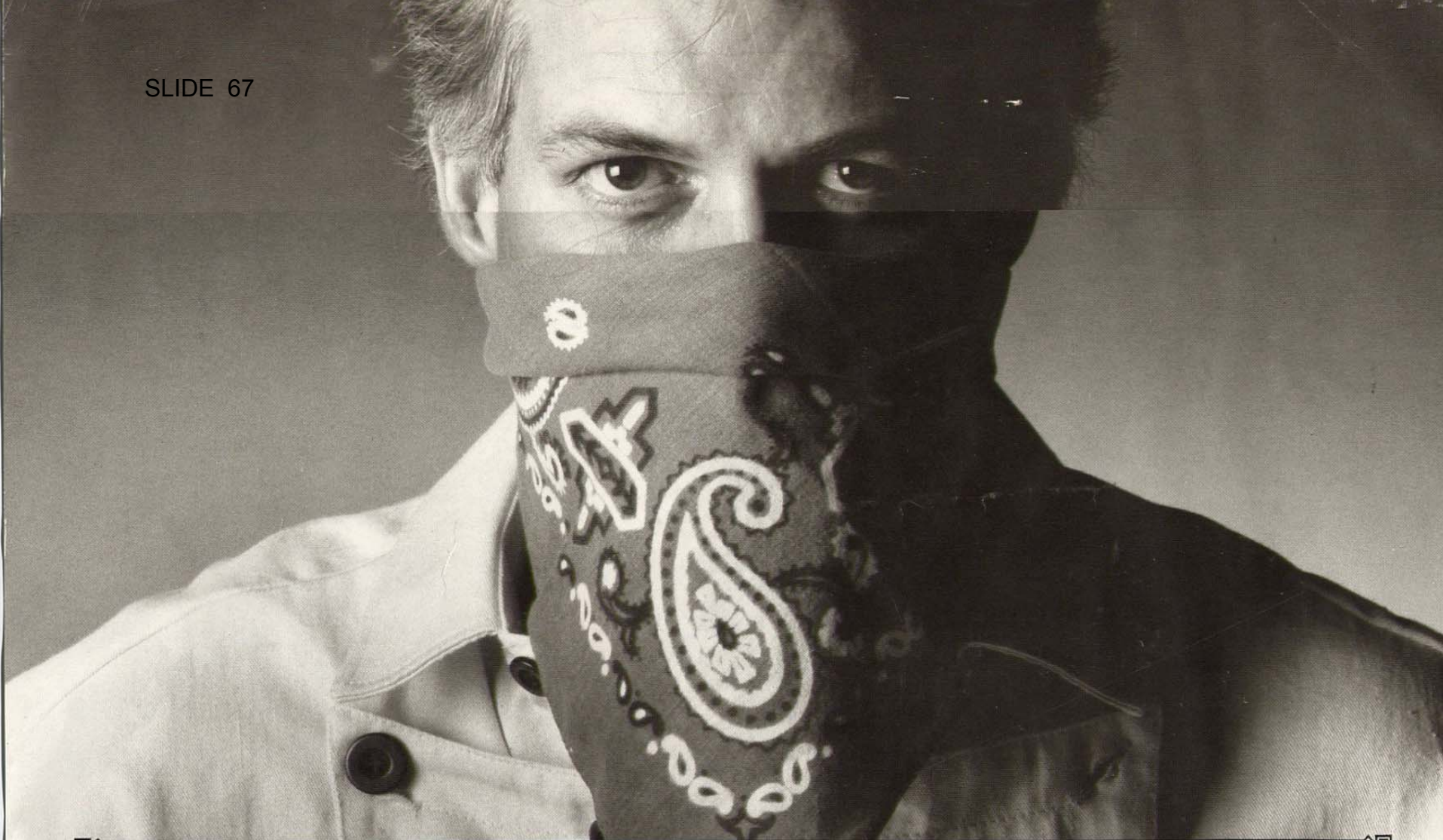
- Cardiac dysrhythmias may be a causative factor.
- Metabolic acidosis may play a major role in deaths and is possibly preventable.
- Restraint asphyxia appears multi-factorial.
- Beware when the restrained patient becomes tranquil.
- Often, deaths happen regardless of care rendered.

**Why has this all become such
a big deal in EMS?**



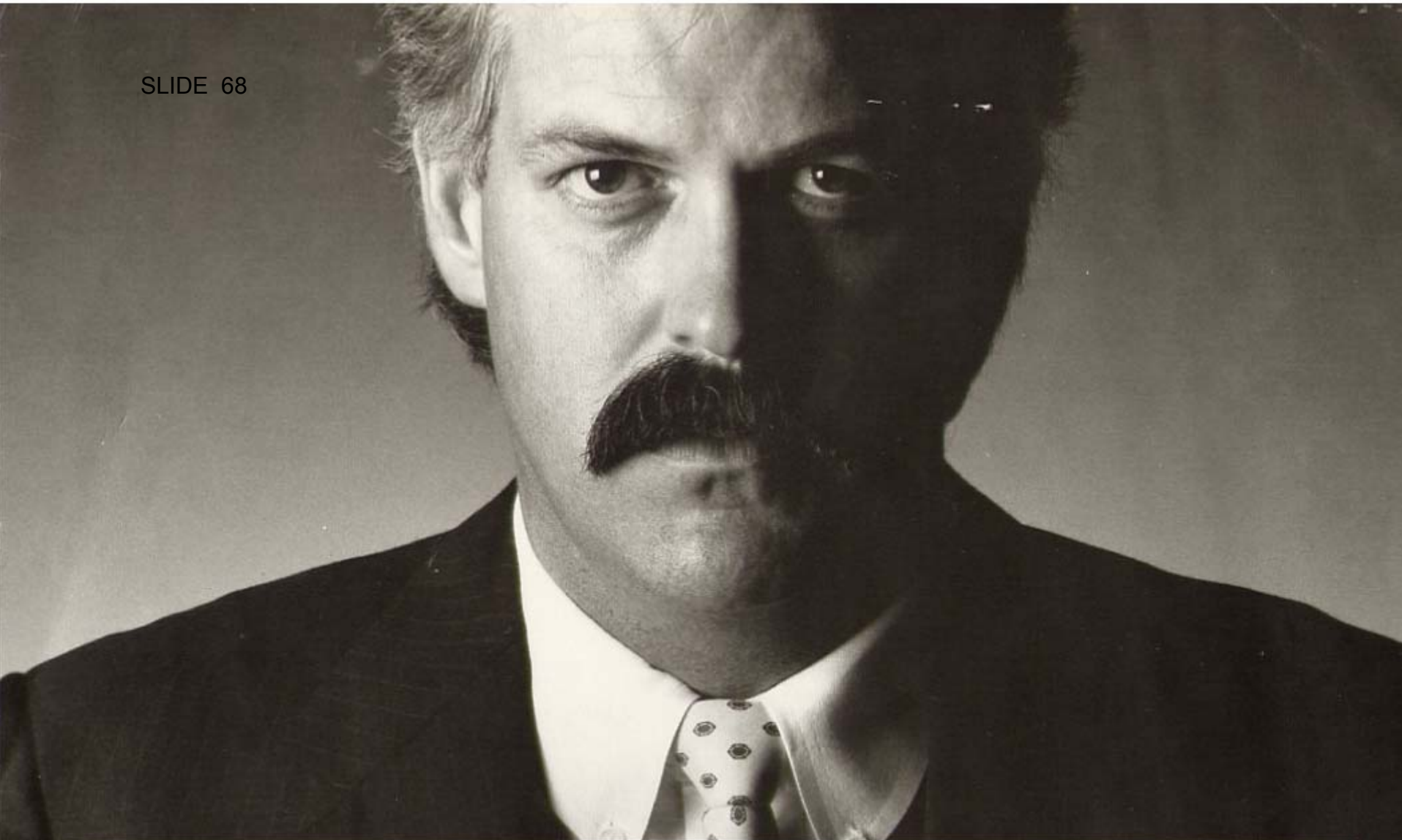
IF YOU CAN READ
THIS...YOU MUST BE
A LAWYER

SLIDE 67



IN THE OLD DAYS, THEY WERE CALLED
“TRAIN ROBBERS”

SLIDE 68



TODAY, THEY'RE CALLED
TRIAL LAWYERS

How does this affect EMS?

- 1995 DOT National Standard Curriculum for EMT-Basic:
 - “Turn patient face down on stretcher”
 - “Secure to stretcher with multiple straps”
 - “Cover face with surgical mask if spitting on EMT-Basic”
- New EMT-I and EMT-P curriculum do not address patient restraint in detail.

How does this affect EMS?

BRADY

Never use hog-tie or hobble restraints.



What should we do?

- NAEMSP. National Association of EMS Physician Paper, Patient Restraint for EMS Systems. *Prehosp Emerg Care.* 2002;6(3): 340-345.

POSITION PAPER

NATIONAL ASSOCIATION OF EMS PHYSICIANS

PATIENT RESTRAINT IN EMERGENCY MEDICAL SERVICES SYSTEMS

Douglas F. Kupas, MD, Gerald C. Wydro, MD

POSITION

The National Association of EMS Physicians (NAEMSP) recognizes that emergency medical services (EMS) personnel encounter agitated and combative patients, and these patients frequently require medical treatment and transportation. To minimize the possibility of injury to patients and EMS personnel, NAEMSP believes that all EMS systems should develop specific protocols for dealing with the violent or combative patient. Protocols may have input from EMS system administrators, providers, legal counsel, and law enforcement representatives, but review and approval by the EMS system medical director are essential.

In addition, the EMS service must assure that all EMS personnel are knowledgeable about the medical conditions that are associated with agitated or combative behavior and are trained to apply the principles of the system's prehospital patient restraint (PPR) protocol during patient care. Use of the

PPR protocol should undergo quality improvement review with specific filters for the appropriateness of restraint for the patient, the type of restraint utilized, and the care provided to the patient during transport.

The NAEMSP believes that the following principles should be incorporated in an EMS system PPR protocol:

1. The safety of EMS personnel is the paramount factor during PPR, followed by the importance of protecting patients from injuring themselves or others.
2. Every EMS service should have a PPR protocol that is applicable to all violent or combative patients.
3. The protocol should outline the indications for patient restraint. The policy should be consistent with state laws and local EMS protocols regarding patient refusal of care and the EMS system's responsibility to care for patients with psychiatric or behavioral emergencies.
4. Patient dignity should be maintained during restraint, and the method of restraint should be individualized to use the least restrictive method of restraint that protects the patient and EMS personnel from harm.
5. The protocol must include a patient assessment to identify

and manage medical conditions that contribute to a patient's violent behavior. Such conditions include, but are not limited to, hypoxia, hypoglycemia, alcohol or drug intoxication, stroke, and brain trauma.

6. The protocol must address the types of restraint devices that will be used (verbal, physical, or chemical), when each will be used, who can apply them, and when direct medical oversight must be involved.
7. Direct medical oversight may be required for combative patients who refuse treatment, for orders to restrain a patient (before or immediately after restraint), or for orders for chemical restraint (before or after medication is administered).
8. The PPR protocols should address the type of physical restraints that are permissible. Any restraint used should allow for rapid removal if the patient vomits or develops respiratory distress. Patients should never be transported while hobbled, "hog-tied," or restrained in a prone position with hands and feet behind the back. Patients should never be transported while "sandwiched" between backboards or mattresses. Restraint techniques should never constrict the neck or compromise the airway.

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NAEMSP

- Look for and treat medical conditions first.
- Medical conditions that can result in confusion, combativeness or agitation:
 - Hypoxia
 - Hypoglycemia
 - Acute drug or alcohol intoxication
 - Stroke Brain trauma

NAEMSP

- Look for and treat reversible conditions before restraining patient.
- In one EMS system, 9% of violent patients were suffering hypoglycemia.
- Use oxygen, dextrose, and naloxone when appropriate (not a Coma Cocktail!)

NAEMSP

- Factors that contribute to adverse medical conditions:
 - Agitated delirium
 - Drug overdose or intoxication
 - Comorbid medical conditions
 - Recent extreme exertion
 - Fighting against restraints
 - Inappropriate restraints

NAEMSP

- These conditions include:
 - Positional asphyxia
 - Aspiration
 - Severe acidosis
 - Rhabdomyolysis
 - Sudden cardiac death

NAEMSP

- Restraint in hobble or hogtie is particularly dangerous.
- Method of patient restraint must allow for continuous patient assessment and for medical interventions during transport.
- Many EMS educational programs do not address agitated delirium and its complications.

NAEMSP

- Local laws should always be followed.
- EMS systems should have protocols for patient restraint.
- Patient should be accompanied by person of the same gender during transport.
- Overstepping the boundaries of restraint may be perceived as battery, assault, or false imprisonment.

NAEMSP

- Types of Restraint:
 - Verbal deescalation
 - Physical restraint
 - Chemical restraint

NAEMSP

- EMS personnel should anticipate the potential for exposure to blood and body fluids.
- Law enforcement should be involved if at all possible.



NAEMSP

- Verbal deescalation:
 - Application of verbal techniques should be applied first.
 - Providers should avoid direct eye contact.
 - Avoid encroachment on the patient's personal space.
 - Always leave an escape route open.
 - Sometimes defuses the situation avoiding the need for further restraint tactics.

NAEMSP

- Physical restraint:
 - EMS personnel must make every effort to avoid injuring the patient and choose restraint devices that are associated with the least chance of injury.
 - EMS personnel, in general, should avoid the use of hard restraints. If used, personnel must be trained in their use and the patient's extremities frequently evaluated for injury or neurovascular compromise.

NAEMSP

- Physical restraint:
 - Minimum of 5 people should ideally be present to safely apply physical restraint (allowing for control of the head and each limb).
 - 4-point restraints are preferred over 2-point restraints.
 - Often helpful to tether the hips, thighs and chest.

NAEMSP

- Contrary to the DOT curriculum, patients should not be transported in the prone position.
- A surgical mask can be placed over the patient's face to prevent spitting.
- A hard cervical collar may decrease the patient's range of motion when attempting to bite.
- EMS personnel should *not* use hand cuffs.

NAEMSP

- While gaining initial control of the patient, it may be acceptable to temporarily restrain the patient in a prone position or sandwich the patient with a mattress.
- This limits patient's visual awareness of the environment and decreases the range of motion of the extremities.
- Personnel must be extremely vigilant for respiratory compromise.

NAEMSP

- As soon as the patient is subdued and controlled, the team should work to move them into a supine 4-point restrained position.
- During transport, a patient should *never* be restrained to a stretcher in a prone position or sandwiched between backboards or mattresses.

NAEMSP

- Physical restraint:
 - The patient should never be left unattended once restrained.
 - Providers should perform and document frequent neurovascular assessment of the extremities.
 - Patient should not be allowed to struggle against the restraints thus leading to severe acidosis and dysrhythmias.

NAEMSP

- Physical restraint:
 - As a rule, physical restraints applied in the field should not be removed until the patient is in the ED.

NAEMSP

- Patient restraint:
 - Weapons used by law enforcement are not appropriate for EMS as they may exacerbate the patient's agitation.
 - Pepper spray
 - Mace
 - Defensive spray
 - Stun guns
 - Air tasers
 - Stun batons
 - Telescoping steel batons

NAEMSP

- Chemical restraint:
 - The addition of specific pharmacological agents to decrease agitation and increase the cooperation of patients who require medical care and transportation.

NAEMSP

- Chemical restraint:
 - Goal is to subdue excessive agitation and struggling against physical restraints.
 - Intervention should change the patient's behavior without reaching the point of amnesia or altering the patient's level of consciousness.

NAEMSP

- Chemical restraint:
 - Butyrophenones and/or benzodiazpines are most frequently used.

NAEMSP

- Chemical restraint:
 - Butyrphenones:
 - Haloperidol (Haldol)
 - Droperidol (Inapsine)
 - Benzodiazepines:
 - Diazepam (Valium)
 - Lorazepam (Ativan)
 - Midazolam (Versed)
 - All can be given IV or IM

NAEMSP

- Chemical restraint:
 - Common combination:
 - Haldol 5 mg/Ativan 2 mg (often called Halivan or B52)

NAEMSP

- Chemical restraint:
 - Droperidol has been tested in 2 EMS studies and found to be effective.
 - In 53 EMS patients, droperidol quickly and effectively sedated 87% of the patients without any serious adverse effects.
 - Another study found droperidol more effective than lorazepam in the emergency setting.

NAEMSP

- Chemical restraint:
 - But, droperidol received the dreaded “black box warning” from the FDA due to prolongation of the QT interval in certain patients and possibly causing dysrhythmias.
 - Warning states that all patients should undergo a 12-lead prior to drug administration.

Chemical Restraint

- Perhaps atypical antipsychotics should be considered:
 - Resperidone (Respiridal)
 - Ziprasidone (Geodon)
 - Olanzapine (Zyprexa Zydis)
- Recent review suggests these with or without benzodiazepines should be considered first.
 - ❖ Yildiz A, Sachs GS, Turgay A. Pharmacological management of agitation in emergency settings. *Emerg Med J.* 2003;20:339-346

NAEMSP

- Benzodiazepines may be the drug of choice in patients who are agitated from the effects of toxicological syndromes or drug overdose.

NAEMSP

- Chemical restraint:
 - Neuromuscular blockers with endotracheal intubation should never be used solely for the purpose of restraining violent behavior.

My Recommendations

1. Look for and treat medical conditions that may cause the delirium.
2. If the patient may need restraint, summon additional help and law enforcement.
3. Begin verbal deescalation while awaiting the arrival of other rescuers.

My Recommendations

4. Always withdraw if you feel your personal safety or the safety of your crew is threatened.
5. When at least five people are available, assign each a body appendage and approach the patient in an organized fashion.
6. Initially control the patient in a prone position, but move to supine position as soon as possible.
7. Apply 4-point restraints using soft material such as roller bandages or gauze.

My Recommendations

8. Patient may be secured to backboard or stretcher.



My Recommendations

9. If the patient requires considerable additional restraint, involve law enforcement personnel.
10. Patient should never be left unattended.
11. Physiological monitors should be applied.
12. Frequent assessment including neurovascular checks.
13. If patient struggles against restraints, consider addition of chemical restraints.

My Recommendations

- Chemical restraint:
 - Midazolam (Versed) [2-5 mg IM]
 - Lorazepam (Ativan) [2-4 mg IM]
 - Diazepam (Valium) [5-10 mg IM]
 - Olanzapine (Zyprexa Zydis) [5-10 mg PO]
 - Ziprasidone (Geodon) [10-20 mg IM]

My Recommendations

- 14.** Leave restraints on until patient is delivered to ED and evaluated.
- 15.** Document the reason for restraint, the method of restraint, those involved, and results of repeated assessments during monitoring.

Summary

- Beware of the patient with agitated or excited delirium.
- Never attempt restraint without adequate help.
- If the patient becomes suddenly tranquil during restraint, promptly evaluate.
- Never transport a patient with a restraint that you do not have the immediate capability to remove.

Summary

- Drug intoxication is a significant risk factor (especially stimulants).
- Patients who recently ran or struggled are at increased risk.
- Obese patients appear at increased risk.
- Never hogtie or use hobble restraints.
- Never restrain prone (except to gain control).
- Do not allow the patient to fight restraint, add chemical restraint.

Summary

- Try and have a person of the same gender ride with the patient during transport.
- Always look for medical causes and treat appropriately.
- There is no shame in withdrawing from dangerous scene and requesting assistance.
- Involve law enforcement in cases that do not respond to simple forms of restraint and have them accompany patient *in the ambulance* to the ED.

Summary

- Chemical restraints should be available to all ALS systems.
- Do not be afraid to inject IM medication through the patient's clothing.
- Use appropriate physiological monitors (ECG, pulse oximetry).
- Patient dignity should be maintained during restraint.
- EMS personnel should never use weapons to restrain a patient (including metal flash lights!)

Summary

- Each system *must* have patient restraint protocols that include:
 - Indications for restraint
 - Patient assessment to identify and manage medical conditions
 - Types of restraints permitted, when to be used, who can apply them, and when medical oversight must be involved.

Summary

- Have a low threshold for contacting medical control
- Document
- Document
- Document

SLIDE 111

