

A black and white photograph showing several emergency medical technicians (EMTs) or paramedics in uniform and hard hats. They are focused on loading a patient onto a stretcher that is being placed into the back of an ambulance. The patient is lying on the stretcher, and the EMTs are carefully securing them. The ambulance has a Star of Life logo and the word 'AMB' visible on its side. The scene is outdoors, likely at an emergency site or training area.

EMS Spinal Assessment and Precautions

Adapted from a presentation prepared by
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Latest Spinal Injury Guidelines

- In July, 2013, NAEMSP and ACS-COT released a joint position paper on “EMS Spinal Precautions and the Use of the Long Backboard”
- Highlights:
 - Utilization of backboards for spinal immobilization during transport should be judicious, so that the potential benefits outweigh the risks

Latest Clinical Guidelines

- Highlights:
 - Patients with penetrating trauma to the head, neck, or torso and no evidence of spinal injury should not be immobilized on a backboard
 - Spinal precautions can be maintained by application of a rigid cervical collar and securing the patient to the EMS stretcher, and may be most appropriate for:
 - Patients who are found to be ambulatory at the scene
 - Patients who must be transported for a protracted time, particularly prior to interfacility transfer



**What do we do
with this?**

Backboards have been a part of EMS since the beginning!

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EMERGENCY CARE
and
TRANSPORTATION
of the Sick and Injured

Committee on Injuries
American Academy of Orthopaedic Surgeons

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TRAINING
of ambulance personnel
and others responsible for
emergency care of the
sick and injured at the
scene and during transport

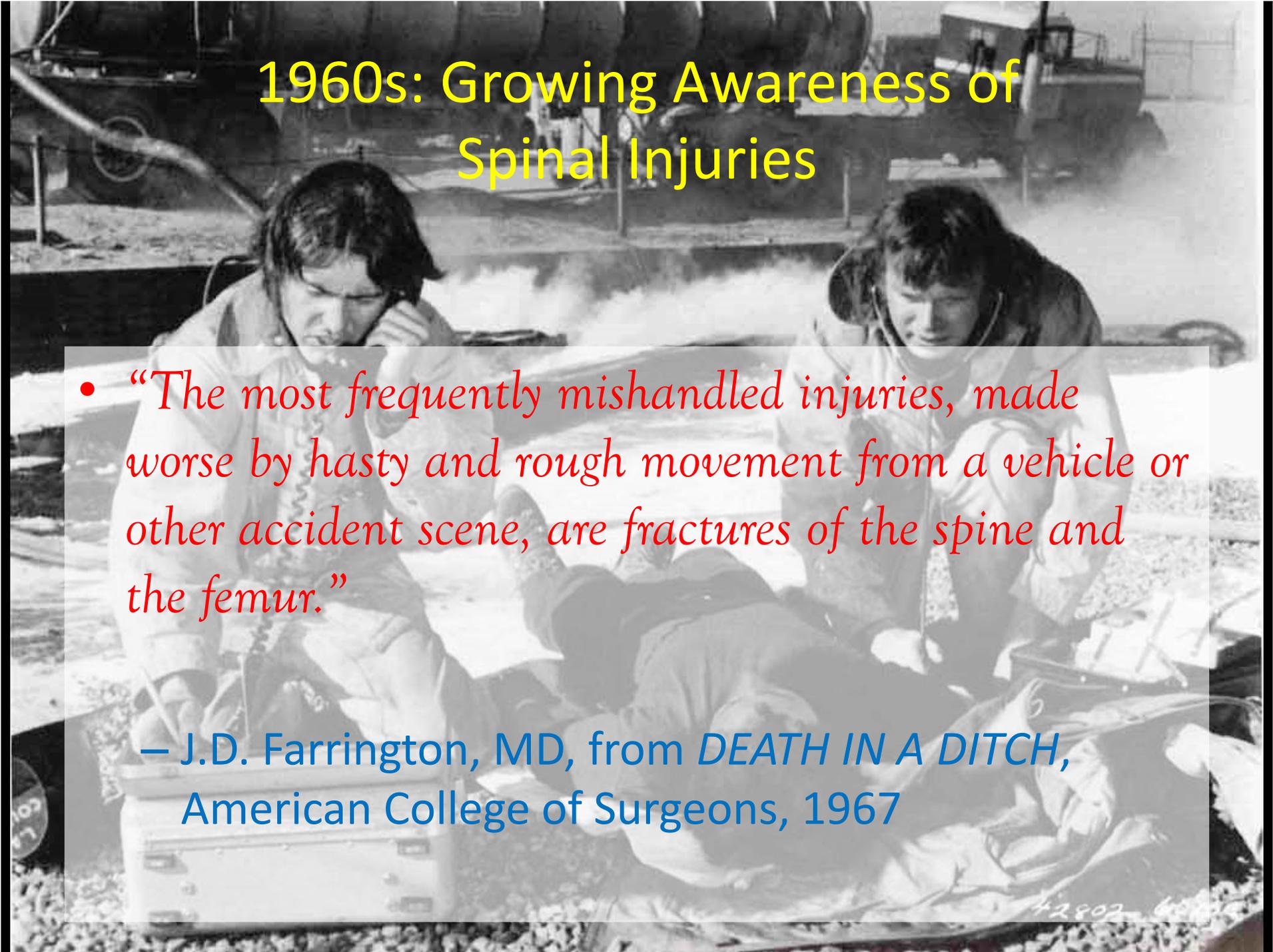
Highway Safety
Research Institute

- Spinal immobilization a key feature of early Emergency Medical Technician training

1960s: Growing Awareness of Spinal Injuries

- “The most frequently mishandled injuries, made worse by hasty and rough movement from a vehicle or other accident scene, are fractures of the spine and the femur.”

— J.D. Farrington, MD, from *DEATH IN A DITCH*,
American College of Surgeons, 1967



Early Spinal Injury Research

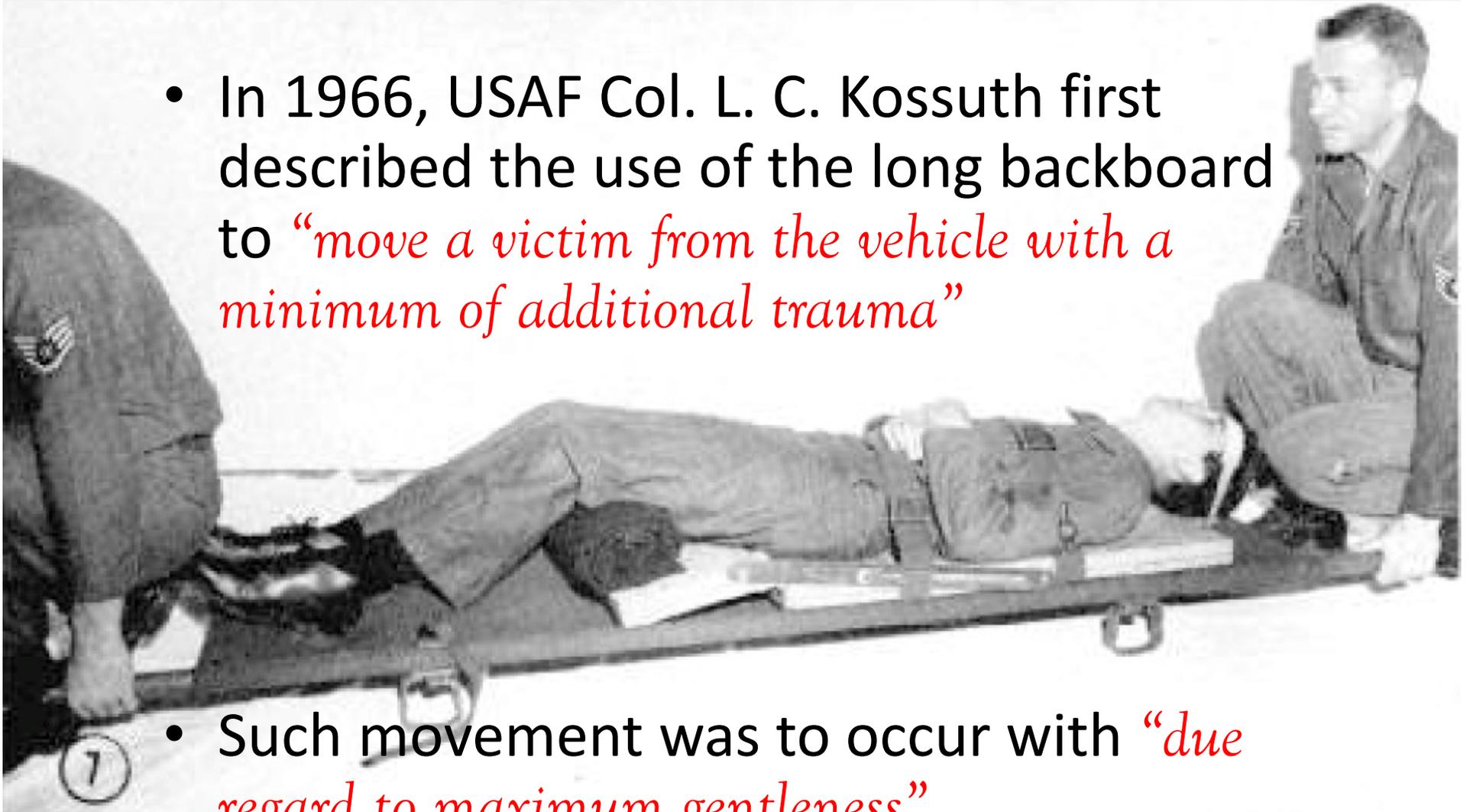
- A 1963 survey of a large series of patients with fatal injuries treated at the Edinburgh Royal Infirmary showed that 25% of fatal complications occurred during the period between the accident and arrival in the ED
 - “A community depends on the expertise of its emergency personnel to correctly manage high risk crises and potentiate recovery”

Early Spinal Injury Research

- A 1965 retrospective study of 958 spinal cord injury patients in Toronto attempted to quantify serious cord damage due to “inept handling of the patients”
 - Only 29 patients (3%) had “incontrovertible” evidence of delayed paralysis, attributed to either pre- or in-hospital inept handling
 - Authors suspected but could not prove that “a larger number undoubtedly suffered this fate”

Birth of Spinal Immobilization

- In 1966, USAF Col. L. C. Kossuth first described the use of the long backboard to *“move a victim from the vehicle with a minimum of additional trauma”*



- Such movement was to occur with *“due regard to maximum gentleness”*

ENDANGERED!

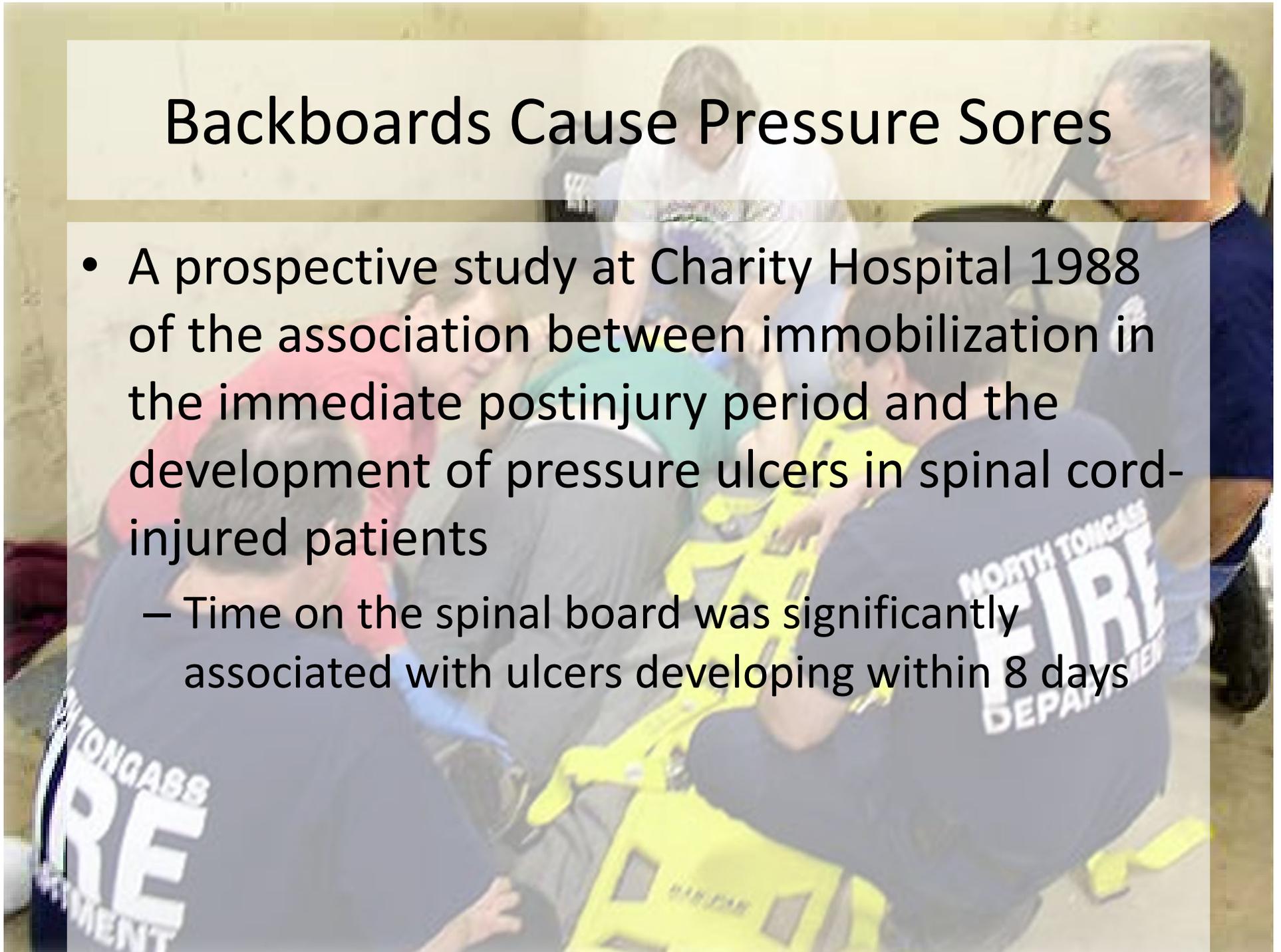


Backboards Cause Pain

- 1989 study of 170 trauma victims eventually discharged from a major ED showed a significant reduction in c- and l- spine pain when patients were allowed off the boards
 - 21% had cervical P/T on the board but not off
 - suggested that the immobilization process or the boards themselves cause pain that otherwise would not be there
- 1993 study caused 100% of 21 healthy volunteers to report pain within 30 minutes of being strapped to a backboard
 - Headache, sacral, lumbar, and mandibular pain most common

Backboards Cause Pressure Sores

- A prospective study at Charity Hospital 1988 of the association between immobilization in the immediate postinjury period and the development of pressure ulcers in spinal cord-injured patients
 - Time on the spinal board was significantly associated with ulcers developing within 8 days



Backboards Cause Pressure Sores

- A 1995 study at Methodist Hospital of Indiana measured the interface (contact) pressures over bony prominences of 20 patients on wooden backboards over 80 minutes
 - Interface pressure > 32 mm Hg causes capillaries collapse, resulting in ischemia and pressure ulceration.
 - This study measured mean interface pressures as high as 149 mm Hg at the sacrum, 59 mm Hg at occiput, and 51 mm Hg at heels

Backboards Create Respiratory Compromise

- 1987 study at Beaumont Hospital of healthy, backboarded males concluded that backboard straps significantly decrease pulmonary function
 - Similar study 1999 showed 15% respiratory restriction in backboarded adult subjects
 - Pediatric study in 1991 showed decreased FVC in children due to backboard straps

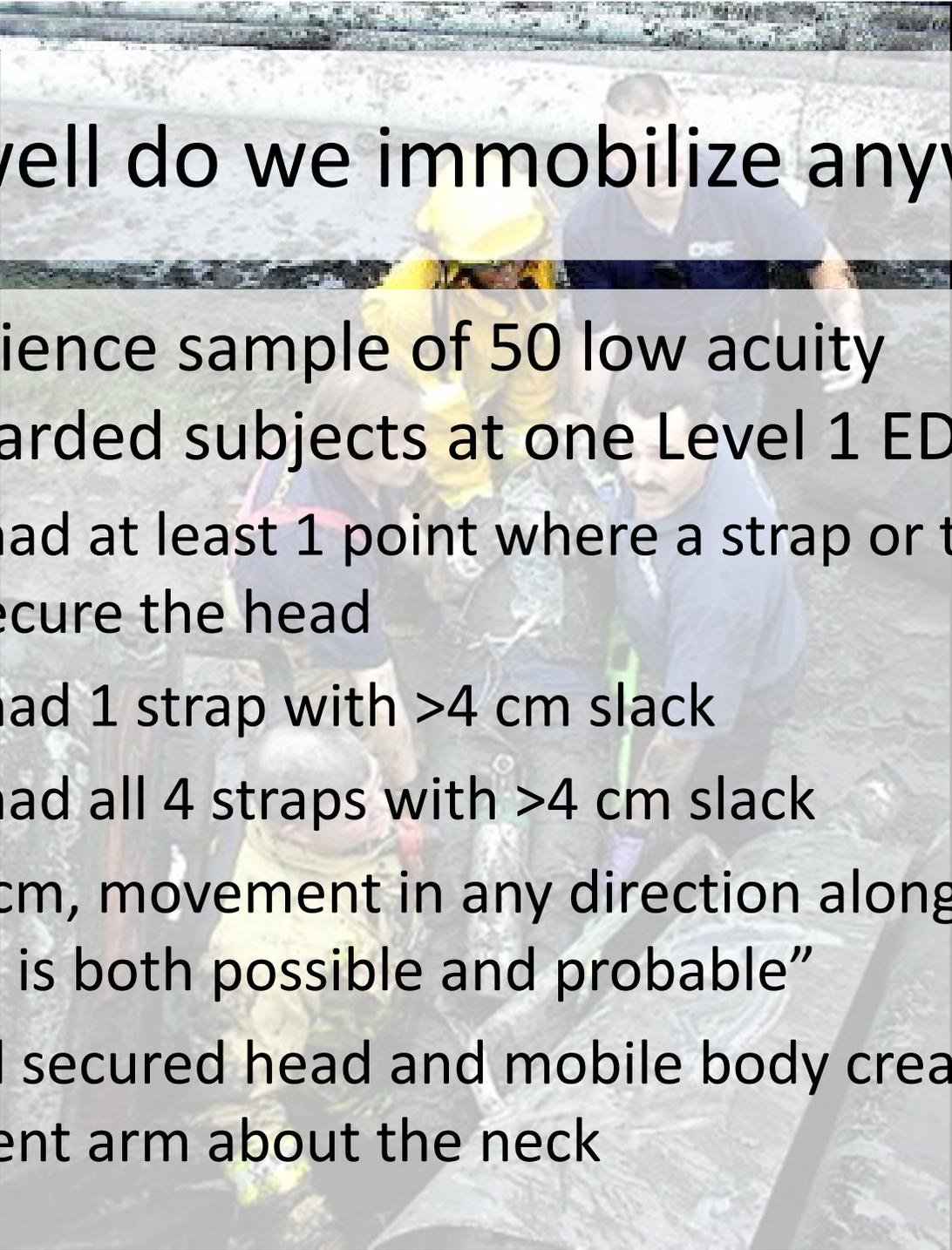
Out-of-hospital Spinal Immobilization: Its Effect on Neurologic Injury

Mark Hauswald, MD, Gracie Ong, MBBS, Dan Tandberg, MD, Zaliha Omar, MBBS

Acad. Emerg. Med. 1998; 5:214–219.

- 5 year retrospective chart review at University of New Mexico and University of Malaysia hospitals
 - All 454 patients with acute spinal cord injuries included during the 5 year study period
 - None of the 120 U. Malaysia patients were immobilized
 - All 334 U. of NM patients were immobilized in the field
 - Hospitals and treatment otherwise equivalent
- Results: 2x MORE neurologic disability in the University of New Mexico patients

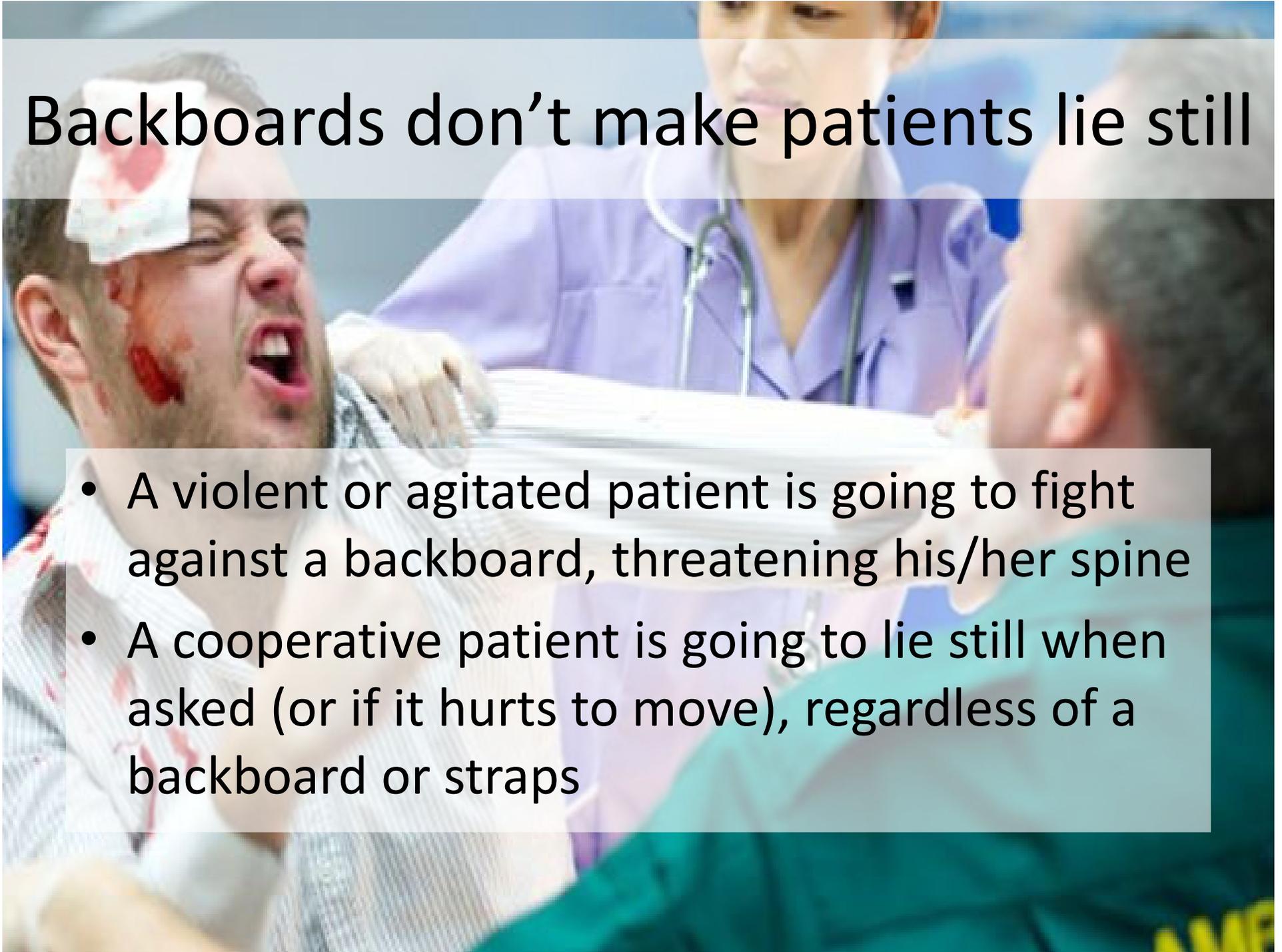
How well do we immobilize anyway?



- Convenience sample of 50 low acuity backboarded subjects at one Level 1 ED
 - 30% had at least 1 point where a strap or tape did not secure the head
 - 70% had 1 strap with >4 cm slack
 - 12% had all 4 straps with >4 cm slack
 - “at 4 cm, movement in any direction along the board is both possible and probable”
 - A well secured head and mobile body creates moment arm about the neck

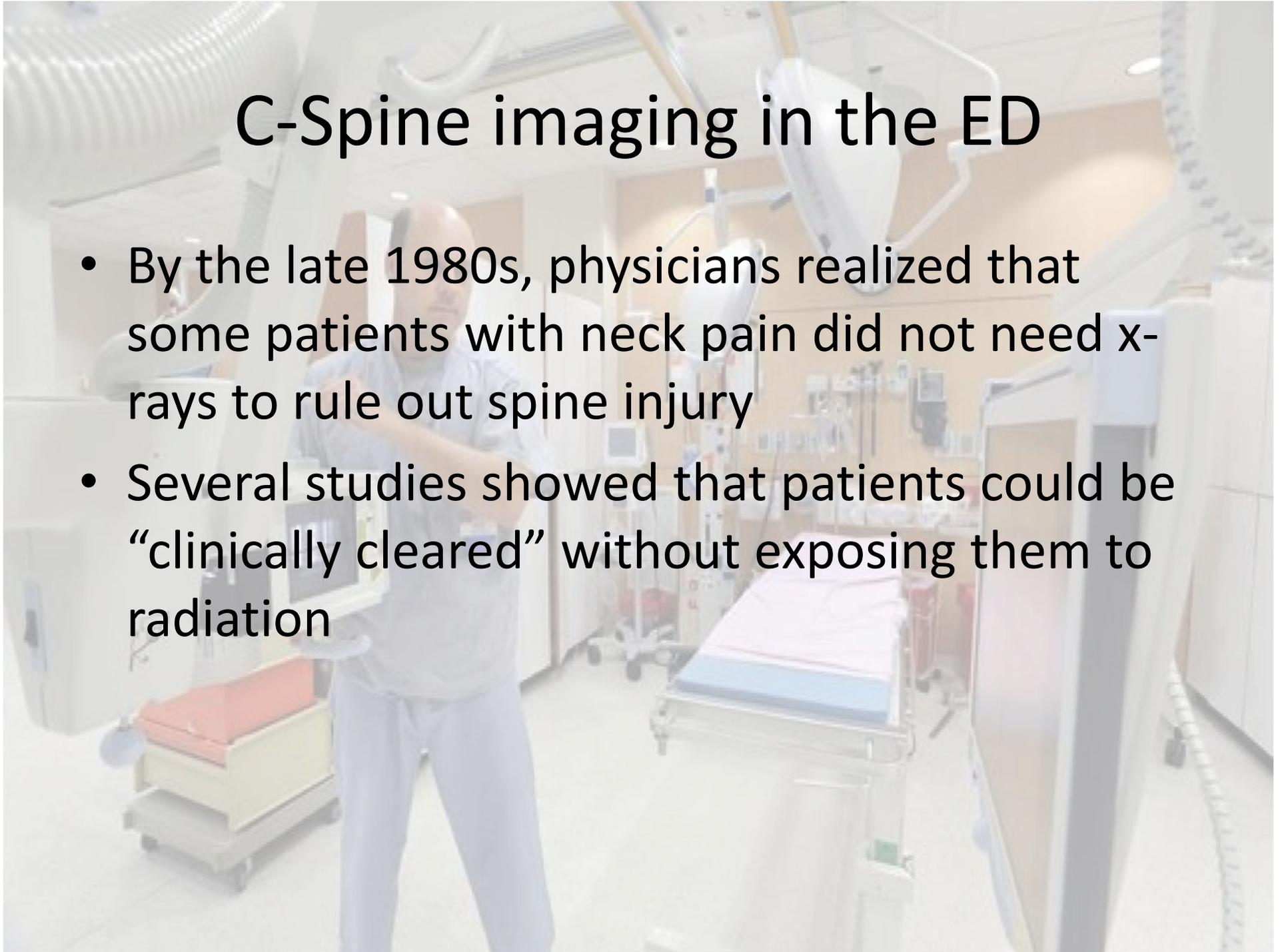
Backboards don't make patients lie still

- A violent or agitated patient is going to fight against a backboard, threatening his/her spine
- A cooperative patient is going to lie still when asked (or if it hurts to move), regardless of a backboard or straps



C-Spine imaging in the ED

- By the late 1980s, physicians realized that some patients with neck pain did not need x-rays to rule out spine injury
- Several studies showed that patients could be “clinically cleared” without exposing them to radiation



NEXUS and Canadian C-Spine rules

- These were the two major studies showing the safety of clinical spine clearance by emergency physicians
 - NEXUS = National Emergency X-Radiography Utilization Group, formed to reduce patient exposure to x-rays
 - Canadian C-Spine rule developed for similar reasons

Figure 11. National Emergency X-Radiography Utilization Study (NEXUS) Criteria

Meets all low-risk criteria?

1. No posterior midline cervical-spine tenderness
2. No evidence of intoxication
3. A normal level of alertness
4. No focal neurologic deficit
5. No painful distracting injuries

YES

No Radiography

NO

Radiography

Canadian C-Spine Rule

For alert (GCS=15) and stable trauma patients where cervical spine injury is a concern.

1. Any High-Risk Factor Which Mandates Radiography?

Age \geq 65 years
or
Dangerous mechanism*
or
Paresthesias in extremities

Rule Not Applicable If:

- Non-trauma cases
- GCS < 15
- Unstable vital signs
- Age < 16 years
- Acute paralysis
- Known vertebral disease
- Previous C-spine surgery

No

Yes

2. Any Low-Risk Factor Which Allows Safe Assessment of Range of Motion?

Simple rearend MVC**
or
Sitting position in ED
or
Ambulatory at any time
or
Delayed onset of neck pain***
or
Absence of midline c-spine tenderness

No

Radiography

Unable

Yes

3. Able to Actively Rotate Neck?

45° left and right

Able

No Radiography

* Dangerous Mechanism:

- fall from elevation \geq 3 feet / 5 stairs
- axial load to head, e.g. diving
- MVC high speed ($>$ 100km/hr), rollover, ejection
- motorized recreational vehicles
- bicycle struck or collision

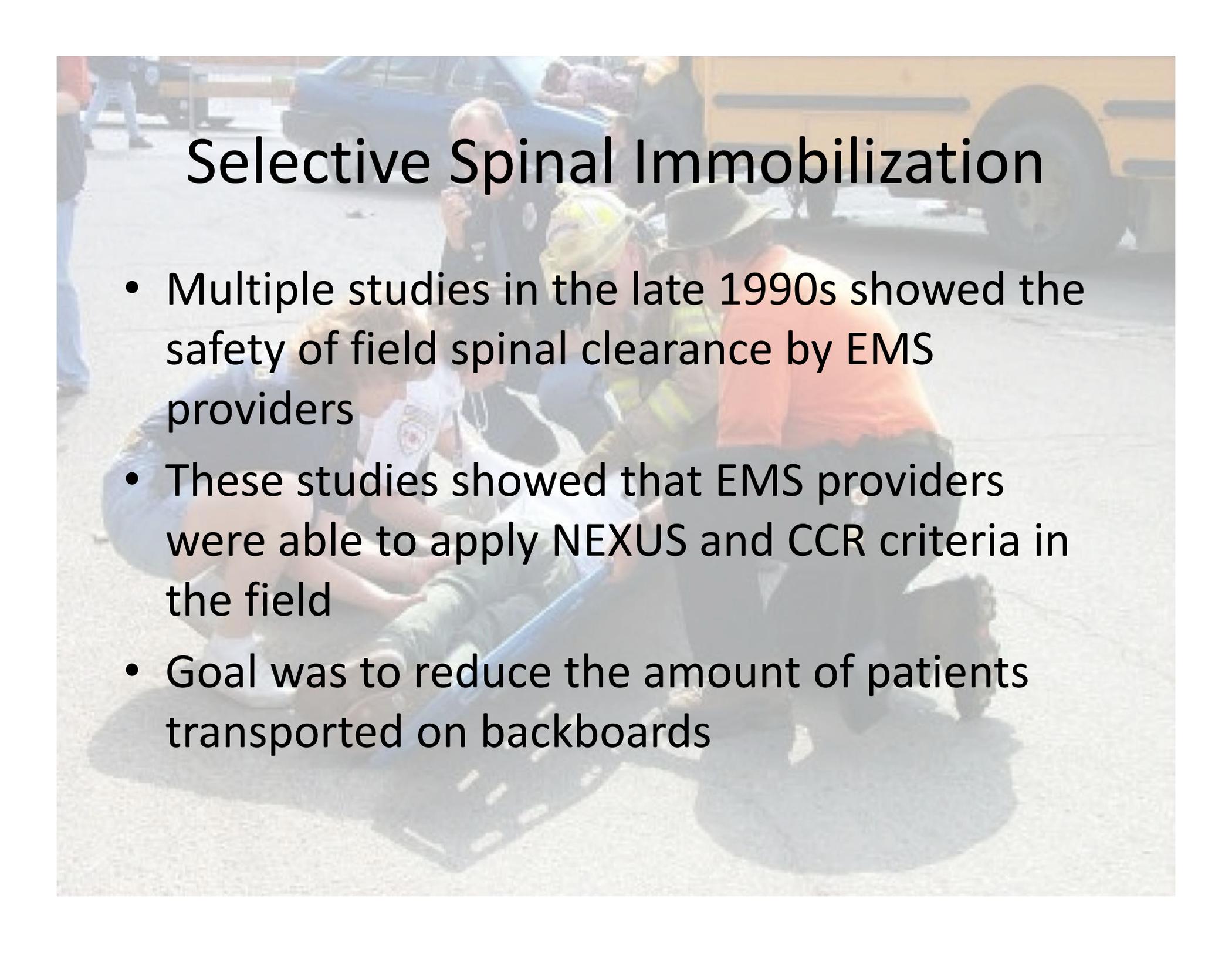
** Simple Rearend MVC Excludes:

- pushed into oncoming traffic
- hit by bus / large truck
- rollover
- hit by high speed vehicle

*** Delayed:

- i.e. not immediate onset of neck pain

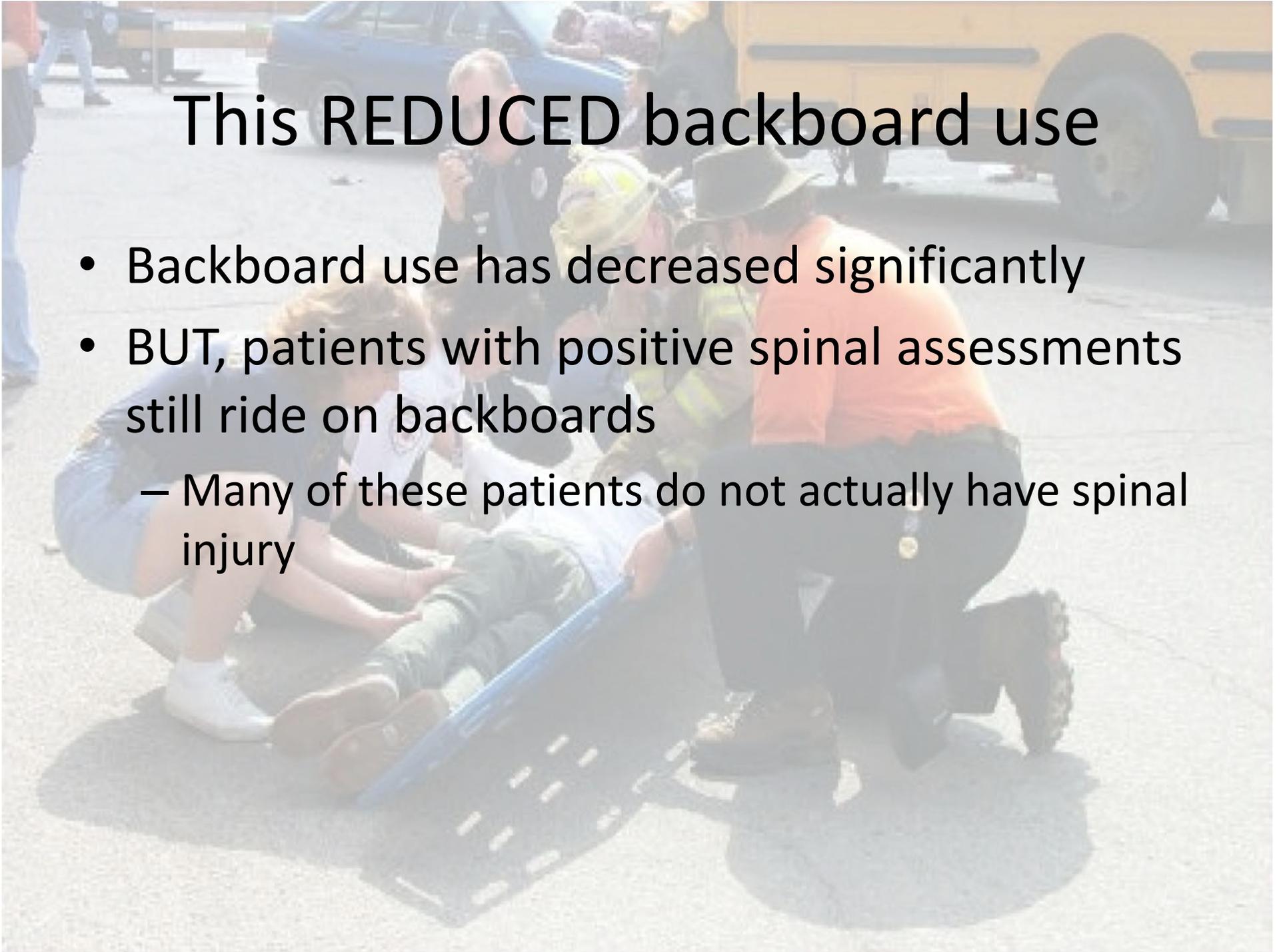
Selective Spinal Immobilization

The background image shows a group of emergency medical services (EMS) providers at an outdoor emergency scene. They are gathered around a patient lying on a stretcher. One provider is wearing a yellow helmet and a high-visibility vest. Another is wearing a black hat and a high-visibility vest. The scene is outdoors on a paved surface, with a blue car and a yellow vehicle visible in the background.

- Multiple studies in the late 1990s showed the safety of field spinal clearance by EMS providers
- These studies showed that EMS providers were able to apply NEXUS and CCR criteria in the field
- Goal was to reduce the amount of patients transported on backboards

This REDUCED backboard use

- Backboard use has decreased significantly
- BUT, patients with positive spinal assessments still ride on backboards
 - Many of these patients do not actually have spinal injury



Goal: protect unstable spine fractures without causing new problems

- Backboards have been proven to cause:
 - Pain
 - Pressure sores
 - Respiratory compromise
- Backboards have NOT been shown to prevent:
 - Spinal movement
 - Further neurologic injury

Recommendation

- Best available evidence supports removing patients from backboards as soon as possible, even if spinal injury is suspected
- This already happens in most EDs shortly after a backboarded patient arrives
- Given the similarities between an ambulance cot and an ED cot, **patients with suspected spinal injury should be removed from the backboard once safely on the ambulance cot**

How do we protect the spine...

...of a patient who MAY have a
spine injury...

...without the risks of a backboard?

NEW Michigan Protocol for Spine Injury Assessment:

Spinal Injury Assessment

Pre-Medical Control

MFR/EMT/SPECIALIST/PARAMEDIC

1. Follow **General Pre-hospital Care protocol**.
2. Assess the mechanism of injury.
3. A patient with a negative mechanism does not need a spine injury clinical assessment
4. Patients with mechanism of injury with the potential for causing spine injury shall have a spine injury clinical assessment performed.
5. Clinical criteria are used as the basis for assessment. If any of the clinical criteria are present or if the assessment cannot be completed, the patient has a positive spine injury assessment.
6. If the mechanism of injury with the potential for causing spine injury exists, the following clinical criteria are assessed:
 - A. Altered mental status
 - B. Use of intoxicants
 - C. Significant distracting painful injury
 - D. Motor and/or sensory deficit
 - E. Spine pain and/or tenderness
7. If any of the clinical criteria are present the patient has a positive spine injury assessment. If none of the clinical criteria are present the patient has a negative spine injury assessment.
8. Patients with a positive spine injury assessment should have spinal precautions maintained during movement and transport. Refer to **Spinal Precautions Procedure**.

Patients over the age of 65 with a mechanism of injury with the potential for causing spine injury will have a cervical collar applied even if the spinal injury clinical assessment is negative. Refer to **Spinal Precautions Procedure**.

Spinal Injury Assessment

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If mechanism exists for spinal injury:

- Examples:
 - Fall
 - Motor vehicle crash
 - Assault with significant head, neck, or back trauma
 - Anything else that could cause spinal injury

Spinal Injury Assessment

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Perform Spinal Assessment

- 6.A-C. Evaluate if the patient can give a reliable exam: Look for:
 - Are they altered?
 - Are they intoxicated?
 - Are they distracted by other injury?

Spinal Injury Assessment

Pre-Medical Control

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Patients over the age of 65 with a mechanism of injury with the potential for causing spine injury will have a cervical collar applied even if the spinal injury clinical assessment is negative. Refer to **Spinal Precautions Procedure**.

Perform Spinal Injury Assessment

- Any unexplained focal motor or sensory neurologic deficit
- Pain or tenderness in posterior midline over spine

Positive Spinal Assessment

Spinal Injury Assessment

Pre-Medical Control

MFR/EMT/SPECIALIST/PARAMEDIC

1. Follow **General Pre-hospital Care protocol**.
2. Assess the mechanism of injury.
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 - A. Altered mental status
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Patients over the age of 65 with a mechanism of injury with the potential for causing spine injury will have a cervical collar applied even if the spinal injury clinical assessment is negative. Refer to **Spinal Precautions Procedure**.

A lateral X-ray of the spine, showing the vertebrae and intervertebral discs. The image is grayscale and serves as a background for the text.

POSITIVE SPINAL ASSESSMENT
means there is a **POSSIBILITY** for
SPINE and/or **SPINAL CORD INJURY**

Spinal Precautions Procedure
should be followed

**UP
R**

Michigan Spinal Precautions Procedure

Michigan
General Procedures
SPINAL PRECAUTIONS

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Spinal Precautions

Pre-Medical Control MFR/EMT/SPECIALIST/PARAMEDIC Indications & General Guidance

1. Refer to the Spinal Injury Assessment Protocol. Patients with a positive spinal injury assessment should have spinal precautions maintained during transport.
2. Major trauma patients who require extrication should have spinal precautions maintained using an extrication device (long backboard or equivalent) during extrication. If sufficient personnel are present, the patient may be log rolled from the extrication device to the ambulance cot during loading of the patient.
3. Patients may remain on the extrication device if the crew deems it safer for the patient considering stability, time and patient comfort considerations. This decision will be at the discretion of the crew.
4. Patients with penetrating traumatic injuries do not require spinal precautions unless a focal neurologic deficit is noted on the spinal injury assessment.
5. An ambulatory patient with a positive spinal injury assessment should have an appropriately sized cervical collar placed. Place the patient directly on the ambulance cot in a position of comfort, limiting movement of the spine during the process.
6. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar. Limit movement of the spine during the process.
7. Patients over the age of 65 with a mechanism of injury with the potential for causing cervical spine injury will have a cervical collar applied even if the spinal injury clinical assessment is negative.

Specific Techniques

1. Cervical Collars
 - A. Cervical collar should be placed on patient prior to patient movement, if possible.
 - B. If no collar can be made to fit patient, towel, blanket rolls, head block or similar device may be used to support neutral head alignment.
 - C. The cervical collar may be removed if interfering with airway management or airway placement, or if causing extreme patient distress.
2. Self-Extrication Procedure
 - A. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar.
 - B. Limit movement of the spine during the process.
3. Emergency Patient Removal
 - A. Indicated when scene poses an imminent or potential life threatening danger to patient and/or rescuers, (e.g. vehicle or structure fire).

Michigan
General Procedures
SPINAL PRECAUTIONS

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- B. Remove the patient from danger while best attempt is made to maintain spinal precautions.
 - C. Rapid Extrication is indicated when patient condition is unstable (i.e.: airway or breathing compromise, shock, unconsciousness, or need for immediate intervention).
4. Long Extrication Device (e.g. long Backboard, scoop stretcher, basket stretcher)
 - A. Indicated when patient requires spinal precautions and the patient condition prevents self-extrication.
 - B. Patient's head and cervical spine should be manually stabilized.
 - C. Rescuers should place the patient in a stable, neutral position where space is created to place backboard or other long extrication device in position near the patient.
 - D. Move the patient to supine position on the long extrication device.
 - E. The patient is secured to the device with torso straps applied before head stabilization.
 - F. Head stabilization material should be placed to allow for movement of the lower jaw to facilitate possible airway management.
 - G. The extrication device is used to move the patient to the ambulance cot.
 5. Log Roll Procedure
 - A. Cervical collar should be placed when indicated.
 - B. Place the backboard or equivalent behind the patient.
 - C. Patient is log rolled, maintaining neutral alignment of spine and extremities.
 - D. Log roll procedure requires 2 or more personnel in contact with the patient.
 - E. If log roll is not possible, patient should be moved to board or equivalent while attempting to maintain neutral alignment spinal precautions.
 - F. Patient is secured to the backboard or equivalent for movement to the ambulance cot.
 - G. Head stabilization materials such as foam pads, blanket rolls may be used to prevent lateral motion. Pad under the head when feasible.
 - H. If sufficient personnel are present, the patient should be log rolled from the extrication device to the ambulance cot during loading of the patient.
 - I. When log roll on to the ambulance cot is impractical, secure the patient to the extrication device and ambulance cot for transport.
 6. Spinal Precautions
 - A. Once the patient is placed on the ambulance cot, if no extrication device is still in place, secure the patient with seatbelts in a supine position, or in position of comfort if a supine position is not tolerated.
 - B. Head may be supported with head block or similar device to prevent rotation if needed. Padding should be placed under the head when practical. Do not tape the head to the ambulance cot.

Michigan Spinal Precautions Procedure

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Special Considerations

1. Hypoventilation is likely to occur with spinal cord injury above the diaphragm. Quality of ventilation should be monitored closely with support offered early.
2. Spinal/neurogenic shock may result from high spinal cord injury. Monitor patient for signs of shock. Refer to **Shock Protocol**.
3. Spinal precautions in the patient wearing a helmet should be according to the **Helmet Removal Procedure**.
4. Manual spinal precautions in the obtunded patient must be initiated and continued until the patient is secured to the ambulance cot.
5. Patients who are markedly agitated, combative or confused may not be able to follow commands and cooperate with minimizing spinal movement. Rigid immobilization should be avoided if it contributes to patient combativeness. Patients may remain on the backboard if the crew deems it safer for the patient, and this will be at the discretion of the crew.
6. Manual in line stabilization must be used during any procedure that risks head or neck movement, such as endotracheal intubation. If manual cervical stabilization is hampering efforts to intubate the patient, the neck should be allowed to move as needed to secure the airway. An unsecured airway is a greater danger to the patient than a spinal fracture.
7. Document spinal precautions techniques utilized.
8. Document the patient's neurologic status before and after establishing spinal precautions when possible.
9. Pediatric Patients and Car Seats:
 - a. Infants restrained in a rear-facing car seat may be immobilized and extricated in the car seat. The child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock).
 - b. Children restrained in a car seat (with a high back) may be immobilized and extricated in the car seat; however, once removed from the vehicle, the child should have spinal precautions maintained as for an adult.
 - c. Children restrained in a booster seat (without a back) need to be extricated and immobilized following standard procedures.

Spinal Precautions Procedure

Indications & General Guidance

1. Refer to the **Spinal Injury Assessment Protocol**. Patients with a positive spinal injury assessment should have spinal precautions maintained during transport.
2. Major trauma patients who require extrication should have spinal precautions maintained using an extrication device (long backboard or equivalent) during extrication. If sufficient personnel are present, the patient may be log rolled from the extrication device to the ambulance cot during loading of the patient.
3. Patients may remain on the extrication device if the crew deems it safer for the patient considering stability, time and patient comfort considerations. This decision will be at the discretion of the crew.

Notes:

1. Patients with a positive spinal injury assessment should have spinal precaution maintained
2. Log roll patients to the ambulance cot when possible
3. EMS crews may keep the patient on the extrication device for transport as needed. It may be quicker to log roll the patient onto the ambulance cot than to secure the patient to the extrication device (backboard) and then the cot.

Spinal Precautions Procedure

Indications & General Guidance

4. Patients with penetrating traumatic injuries do not require spinal precautions unless a focal neurologic deficit is noted on the spinal injury assessment.
5. An ambulatory patient with a positive spinal injury assessment should have an appropriately sized cervical collar placed. Place the patient directly on the ambulance cot in a position of comfort, limiting movement of the spine during the process.
6. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar. Limit movement of the spine during the process.

Notes:

4. Penetrating trauma patients do not require spinal precautions. If a neurologic deficit is noted maintain spinal precautions but no backboard is needed.
5. For ambulatory patients with a positive assessment place a collar and put the patient on the ambulance cot. No standing takedowns.
6. Patients may self-extricate when possible.

Patients who self extricate have less cervical motion than when extricated by rescuers.

Spinal Precautions Procedure

Indications & General Guidance

7. Patients over the age of 65 with a mechanism of injury with the potential for causing cervical spine injury will have a cervical collar applied even if the spinal injury clinical assessment is negative.

Notes:

7. Place the patient over 65 with a potential mechanism and negative injury assessment in a collar in a position of comfort

Why?

- Our spinal assessment tool – the same one we have used for years to decide whether or not to backboard – is not 100% accurate (but it is very close)
- Most of the “false negatives” are in patients >65

Spinal Precautions Procedure

Specific Techniques

1. Cervical Collars

- A. Cervical collar should be placed on patient prior to patient movement, if possible.
- B. If no collar can be made to fit patient, towel, blanket rolls, head block or similar device may be used to support neutral head alignment.
- C. The cervical collar may be removed if interfering with airway management or airway placement, or if causing extreme patient distress.

2. Self-Extrication Procedure

- A. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar.
- B. Limit movement of the spine during the process.

3. Emergency Patient Removal

- A. Indicated when scene poses an imminent or potential life threatening danger to patient and/or rescuers, (e.g. vehicle or structure fire).
- B. Remove the patient from danger while best attempt is made to maintain spinal precautions.
- C. Rapid Extrication is indicated when patient condition is unstable (i.e.: airway or breathing compromise, shock, unconsciousness, or need for immediate intervention).

4. Long Extrication Device (e.g. long Backboard, scoop stretcher, basket stretcher)

- A. Indicated when patient requires spinal precautions and the patient condition prevents self-extrication.
- B. Patient's head and cervical spine should be manually stabilized.
- C. Rescuers should place the patient in a stable, neutral position where space is created to place backboard or other long extrication device in position near the patient.
- D. Move the patient to supine position on the long extrication device.
- E. The patient is secured to the device with torso straps applied before head stabilization.
- F. Head stabilization material should be placed to allow for movement of the lower jaw to facilitate possible airway management.
- G. The extrication device is used to move the patient to the ambulance cot.

Spinal Precautions Procedure

Specific Techniques

5. Log Roll Procedure

- A. Cervical collar should be placed when indicated.
- B. Place the backboard or equivalent behind the patient.
- C. Patient is log rolled, maintaining neutral alignment of spine and extremities.
- D. Log roll procedure requires 2 or more personnel in contact with the patient.
- E. If log roll is not possible, patient should be moved to board or equivalent while attempting to maintain neutral alignment spinal precautions.
- F. Patient is secured to the backboard or equivalent for movement to the ambulance cot.
- G. Head stabilization materials such as foam pads, blanket rolls may be used to prevent lateral motion. Pad under the head when feasible.
- H. If sufficient personnel are present, the patient should be log rolled from the extrication device to the ambulance cot during loading of the patient.
- I. When log roll on to the ambulance cot is impractical, secure the patient to the extrication device and ambulance cot for transport.

6. Spinal Precautions

- A. Once the patient is placed on the ambulance cot, if no extrication device is still in place, secure the patient with seatbelts in a supine position, or in position of comfort if a supine position is not tolerated.
- B. Head may be supported with head block or similar device to prevent rotation if needed. Padding should be placed under the head when practical. Do not tape the head to the ambulance cot.

Spinal Precautions Procedure

Special Considerations

1. Hypoventilation is likely to occur with spinal cord injury above the diaphragm. Quality of ventilation should be monitored closely with support offered early.
2. Spinal/neurogenic shock may result from high spinal cord injury. Monitor patient for signs of shock. Refer to **Shock Protocol**.
3. Spinal precautions in the patient wearing a helmet should be according to the **Helmet Removal Procedure**.
4. Manual spinal precautions in the obtunded patient must be initiated and continued until the patient is secured to the ambulance cot.
5. Patients who are markedly agitated, combative or confused may not be able to follow commands and cooperate with minimizing spinal movement. Rigid immobilization should be avoided if it contributes to patient combativeness. Patients may remain on the backboard if the crew deems it safer for the patient, and this will be at the discretion of the crew.

Spinal Precautions Procedure

Special Considerations

6. Manual in line stabilization must be used during any procedure that risks head or neck movement, such as endotracheal intubation. If manual cervical stabilization is hampering efforts to intubate the patient, the neck should be allowed to move as needed to secure the airway. An unsecured airway is a greater danger to the patient than a spinal fracture.

7. Document spinal precautions techniques utilized.

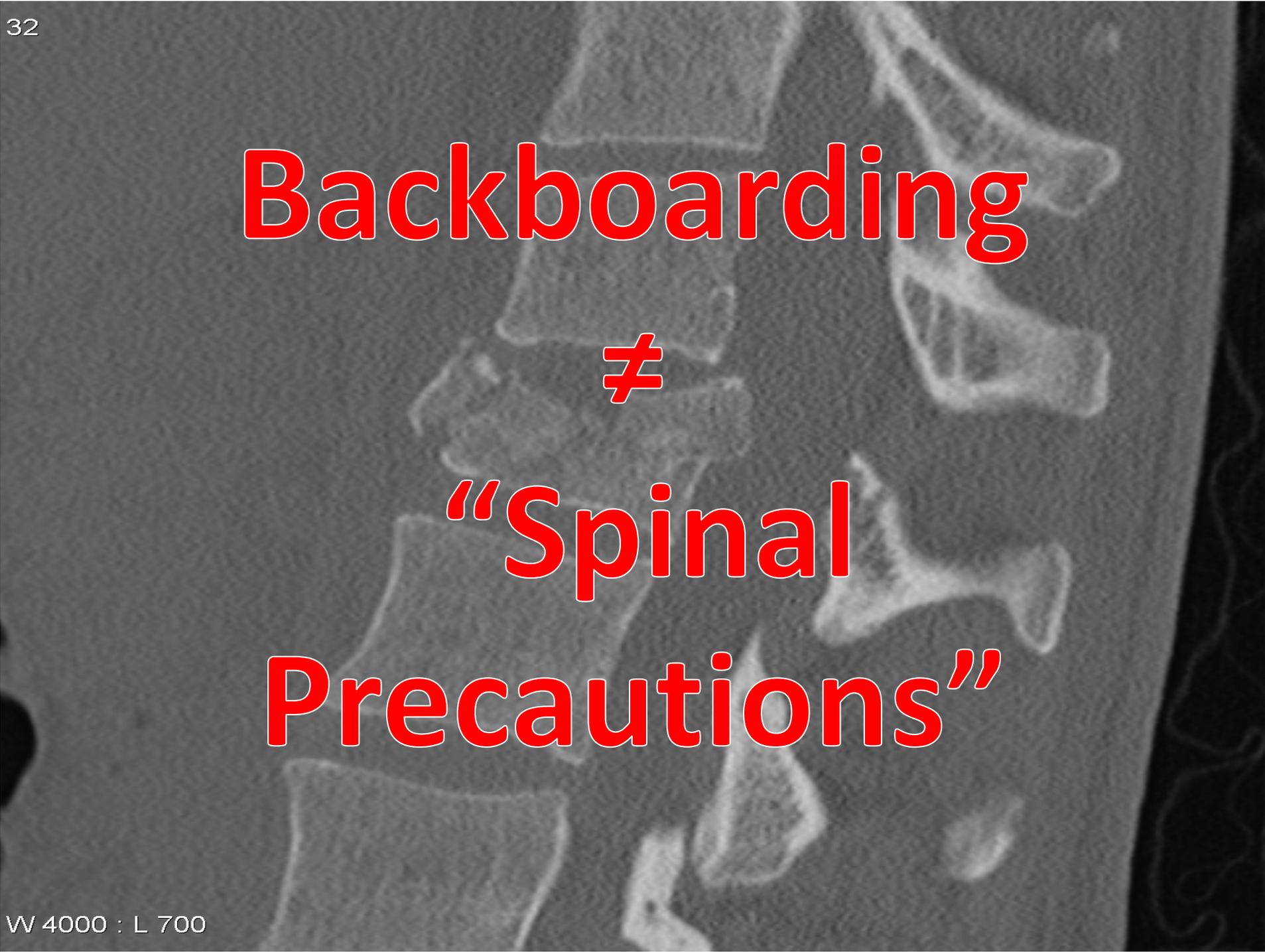
8. Document the patient's neurologic status before and after establishing spinal precautions when possible.

9. Pediatric Patients and Car Seats:

a. Infants restrained in a rear-facing car seat may be immobilized and extricated in the car seat. The child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock).

b. Children restrained in a car seat (with a high back) may be immobilized and extricated in the car seat; however, once removed from the vehicle, the child should have spinal precautions maintained as for an adult.

c. Children restrained in a booster seat (without a back) need to be extricated and immobilized following standard procedures.

A lateral X-ray of the spine, showing the vertebrae and intervertebral discs. The image is in grayscale and serves as a background for the text.

Backboarding
≠
**“Spinal
Precautions”**



**Backboards are an
EXTRICATION TOOL**

A white cervical collar is shown against a black background. The collar is positioned diagonally from the top-left to the bottom-right. It has several dark, oval-shaped cutouts along its length. Overlaid on the collar is red text with a white outline. The text reads: "Remember to REMIND hospital staff of potential spine injury".

**Remember to
REMIND hospital
staff of potential
spine injury**

Questions?