

TO SPINAL OR NOT?

DAISLYNN KIMBALL

NRP, MA

Spinal Immobilization is
Impossible!



“Spinal motion restriction is the attempt to maintain the spine in anatomic alignment and minimize gross movement, and does not mandate the use of specific adjunct”

SPINAL
IMMOBILIZATION
VS. SPINAL
MOTION
RESTRICTION

WHY SPINAL MOTION RESTRICTION OVER SPINAL IMMOBILIZATION?

- SPINAL IMMOBILIZATION PROVEN TO CAUSE HARM INCLUDING:
 - AIRWAY COMPROMISE
 - RESPIRATORY IMPAIRMENT
 - ASPIRATION RISK
 - TISSUE ISCHEMIA
 - INCREASED INTRACRANIAL PRESSURE
 - PAIN
 - HIGHER MORTALITY RATES

STUDIES SUPPORTING FURTHER HARM

1. BIOMECHANICAL ANALYSIS OF SPINAL IMMOBILISATION DURING PREHOSPITAL EXTRICATION: A PROOF OF CONCEPT STUDY
2. CERVICAL SPINE MOTION DURING EXTRICATION
3. SPINE IMMOBILIZATION IN PENETRATING TRAUMA: MORE HARM THAN GOOD?
4. EFFECTS OF PREHOSPITAL SPINAL IMMOBILIZATION: A SYSTEMIC REVIEW OF RANDOMIZED TRAILS ON HEALTHY PATIENTS.
5. OUT-OF-HOSPITAL SPINAL IMMOBILIZATION: ITS EFFECT ON NEUROLOGICAL INJURY

STUDY CONDUCTED: A STATEWIDE, PREHOSPITAL EMERGENCY MEDICAL SERVICE SELECTIVE PATIENT SPINE IMMOBILIZATION PROTOCOL

A STUDY CONDUCTED BY:

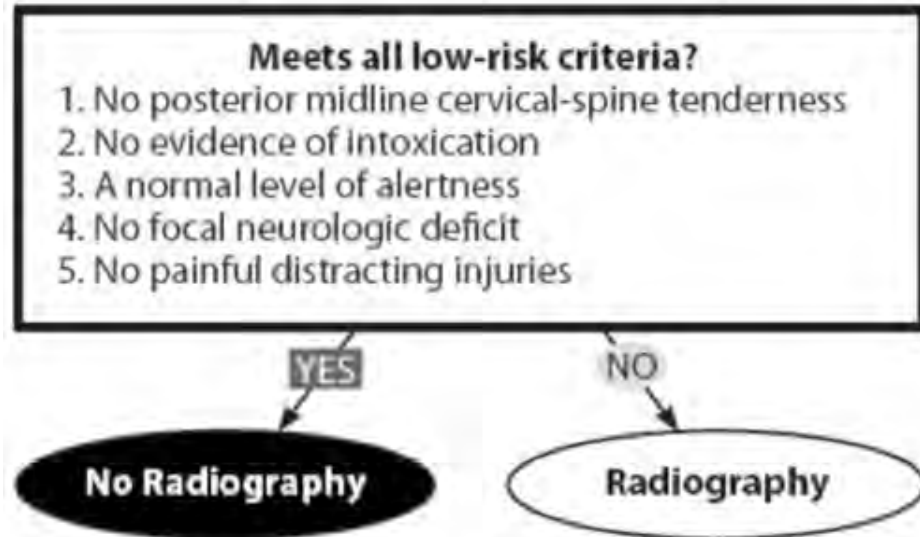
BACKGROUND: EVALUATION OF PRACTICES AND OUTCOMES ASSOCIATED WITH A STATEWIDE, EMERGENCY MEDICAL SERVICES PROTOCOL FOR TRAUMA PATIENT SPINE ASSESSMENT AND SELECTIVE PATIENT IMMOBILIZATION.

CONCLUSION: THE USE OF THIS STATEWIDE EMS SPINE ASSESSMENT PROTOCOL RESULTED IN 1 NONIMMOBILIZED, UNSTABLE SPINE FRACTURE PATIENT IN APPROXIMATELY 32,000 TRAUMA ENCOUNTERS.

WHO NEEDS SPINAL MOTION RESTRICTION?

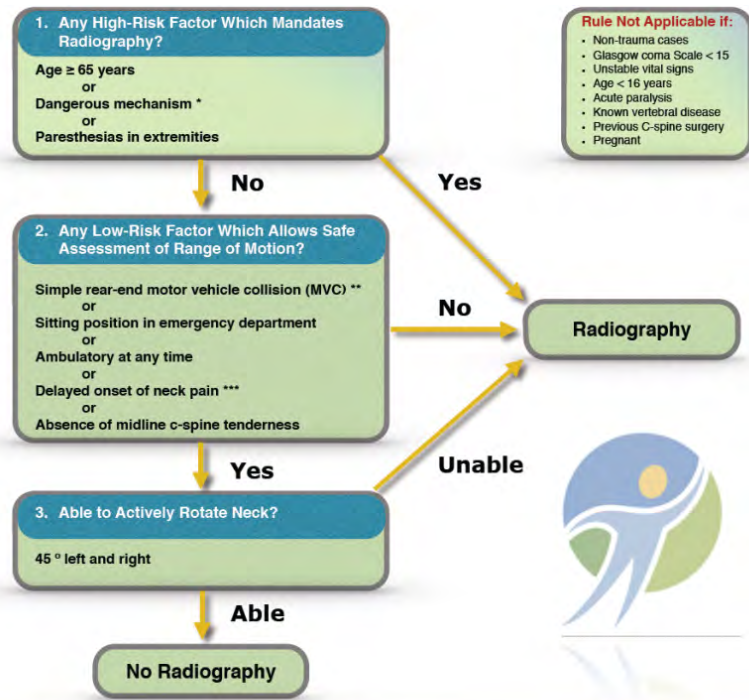
- VALIDATED INDICATIONS:
 - NEXUS CRITERIA
 - CANADIAN C-SPINE RULES
 - BLUNT MECHANISM OF INJURIES AND
 - ALTERED LEVEL OF CONSCIOUSNESS OR CLINICAL INTOXICATION
 - MID-LINE SPINAL PAIN AND/OR TENDERNESS
 - FOCAL NEUROLOGICAL SIGNS AND/OR SYMPTOMS
 - ANATOMIC DEFORMITY OF THE SPINE
 - DISTRACTING INJURIES

NEXUS LOW-RISK CRITERIA



- **A**- ABSENCE OF NSAID
- **N**-NEUROLOGICAL DEFICIT
- **S**- SPINAL TENDERNESS (MIDLINE)
- **A**- ALTERED MENTAL STATUS
- **I**- INTOXICATION
- **D**- DISTRACTING INJURY**

CANADIAN C-SPINE RULE (CCR)



<p>*Dangerous Mechanism</p> <ul style="list-style-type: none"> • Fall from elevation ≥ 3 feet or 5 stairs • Axial load to head, e.g. diving • MVC high speed (> 100 km/h), rollover, ejection • Motorized recreational vehicles • Bicycle struck or collision 	<p>**Simple Rear-end MVC Excludes</p> <ul style="list-style-type: none"> • Pushed into oncoming traffic • Hit by bus or large truck • Rollover • Hit by high speed vehicle 	<p>***Delayed</p> <ul style="list-style-type: none"> • Not immediate onset of neck pain
<p><small>The developer of the rule: Ian G. Stiell, MD, MSc, FRCPC Professor and Chair, Department of Emergency Medicine, University of Ottawa Distinguished Professor and University Health Research Chair, University of Ottawa Senior Scientist, Ottawa Hospital Research Institute</small></p>		

- DEVELOPED TO DETERMINE NEED FOR RADIOGRAPHY USAGE.
- APPLICABLE TO PATIENTS WHO ARE IN AN ALERT (GCS 15) AND STABLE CONDITION FOLLOWING TRAUMA WHERE CERVICAL SPINE INJURY IS CONCERN.

GOING FORWARD ...EMS EDUCATION

- TRAINING SHOULD INCLUDE:
 - SPINAL MOTION RESTRICTION AND SPINAL PRECAUTIONS
 - NO SPINAL PRECAUTIONS WITH PENETRATING TRAUMA, UNLESS NEUROLOGICAL DEFICIT IS PRESENT
 - TAUGHT UTILIZATION OF NEXUS CRITERIA OR CANADIAN C-SPINE RULE
 - APPLY PROPERLY SIZED CERVICAL COLLAR FOR PATIENT WITH BOTH A MECHANISM OF INJURY AND A POSITIVE CLINICAL ASSESSMENT
 - UTILIZATION OF SCOOP STRETCHERS FOR PATIENTS WITH SUSPECTED SPINAL INJURIES
 - TRANSPORT PATIENT WITH SPINAL PRECAUTIONS WITH A CERVICAL COLLAR DIRECTLY ON STRETCHER COT IN POSITION OF COMFORT
 - LONG SPINE BOARDS ARE AN EFFECTIVE EXTRICATION DEVICE

REFERENCES

“JOURNAL CLUB JANUARY 2018 - CERVICAL SPINE FRACTURES IN THE ELDERLY.” *DOWN EAST EMERGENCY MEDICINE*,
WWW.DOWNEASTEM.ORG/DOWNEASTEM/2017/7/1/0XHY3CGKC1ZN9QKDATAJO9GYTWH45C-AETBY-ZXJB3-D6DSB-JGZP7-WPJ9H-5SM6F-3YGRE.

“THE CANADIAN C-SPINE RULE VERSUS THE NEXUS LOW-RISK CRITERIA IN PATIENTS WITH TRAUMA | NEJM.” *NEW ENGLAND JOURNAL OF MEDICINE*,
WWW.NEJM.ORG/DOI/FULL/10.1056/NEJMOA031375.

WOODYARD JR., DONNIE. *MEMO TO LOUISIANA EMS EDUCATION PROGRAMS, LOUISIANA EMS PROVIDERS*, 23 NOVEMBER 2015.