Medical Response at Cycling Events- Preparing for the Worst

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Disclosures

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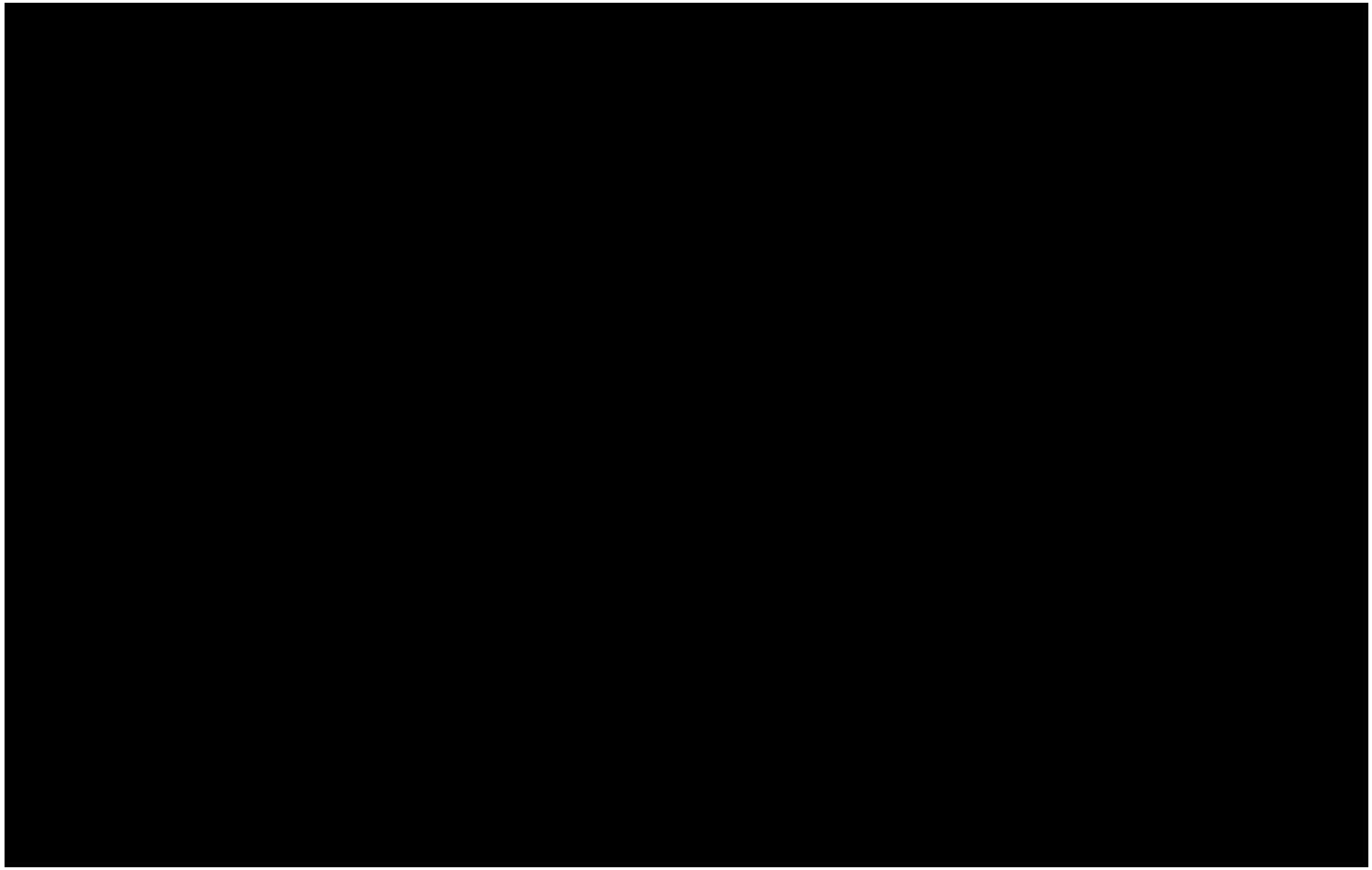
Objectives

- Identify strategies to treat the injured cyclist in a professional event and negotiate pitfalls in the treatment and disposition
- Recognize the unique demands of treating cyclists in the prehospital arena with a variety of conditions
- Identify strategies to minimize the impact of medical incidents on the safety of the race and other riders

Scope of cycling events

- 120 athletes, 500-800 staff and entourage
- Over 500 race miles, 1000+ road miles
- 10-12 hospitals, 6-8 ambulance services
- 8-14 medical staff
- Weather
- Constantly moving

So there you are…



50,000 foot view

- 90% Logistics
- 10% Medicine
  - Albeit an incredibly important 10%
- Planning and transparency are key to
  - Team/Athlete satisfaction
  - Medical Staff satisfaction
  - Garner support of key stakeholders
    - Organizers/Production
    - EMS/Collaborating agencies
- Standardized Approach
  - Movement, Staffing, Communications
  - NIMS/ICS
  - Predictive Modeling

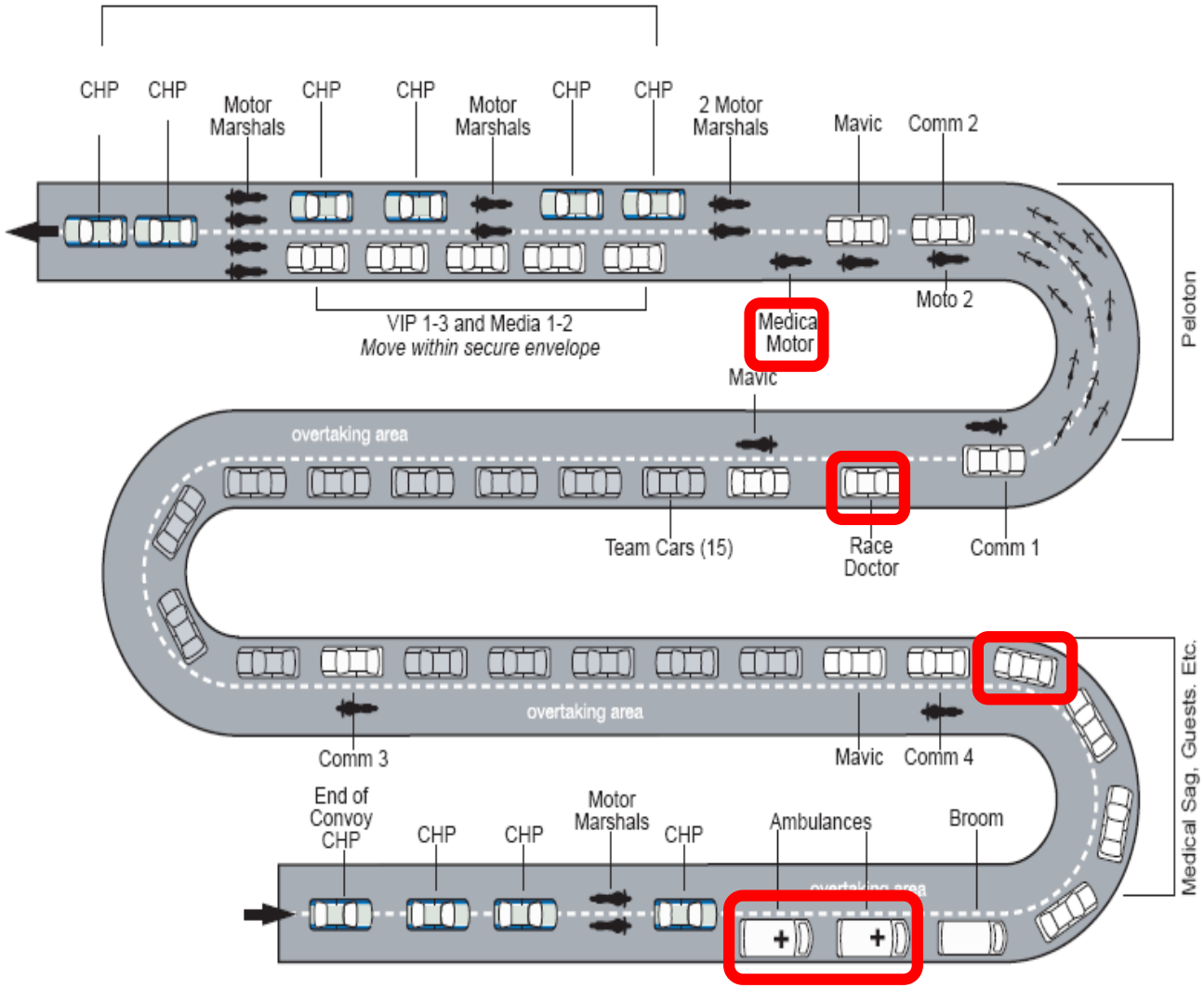
Event flow and logistics

- Static tent versus dynamic response
- Team travel
- Police and safety caravan
- EMS travel
- Integration with other event logistics
- Security and traffic flow

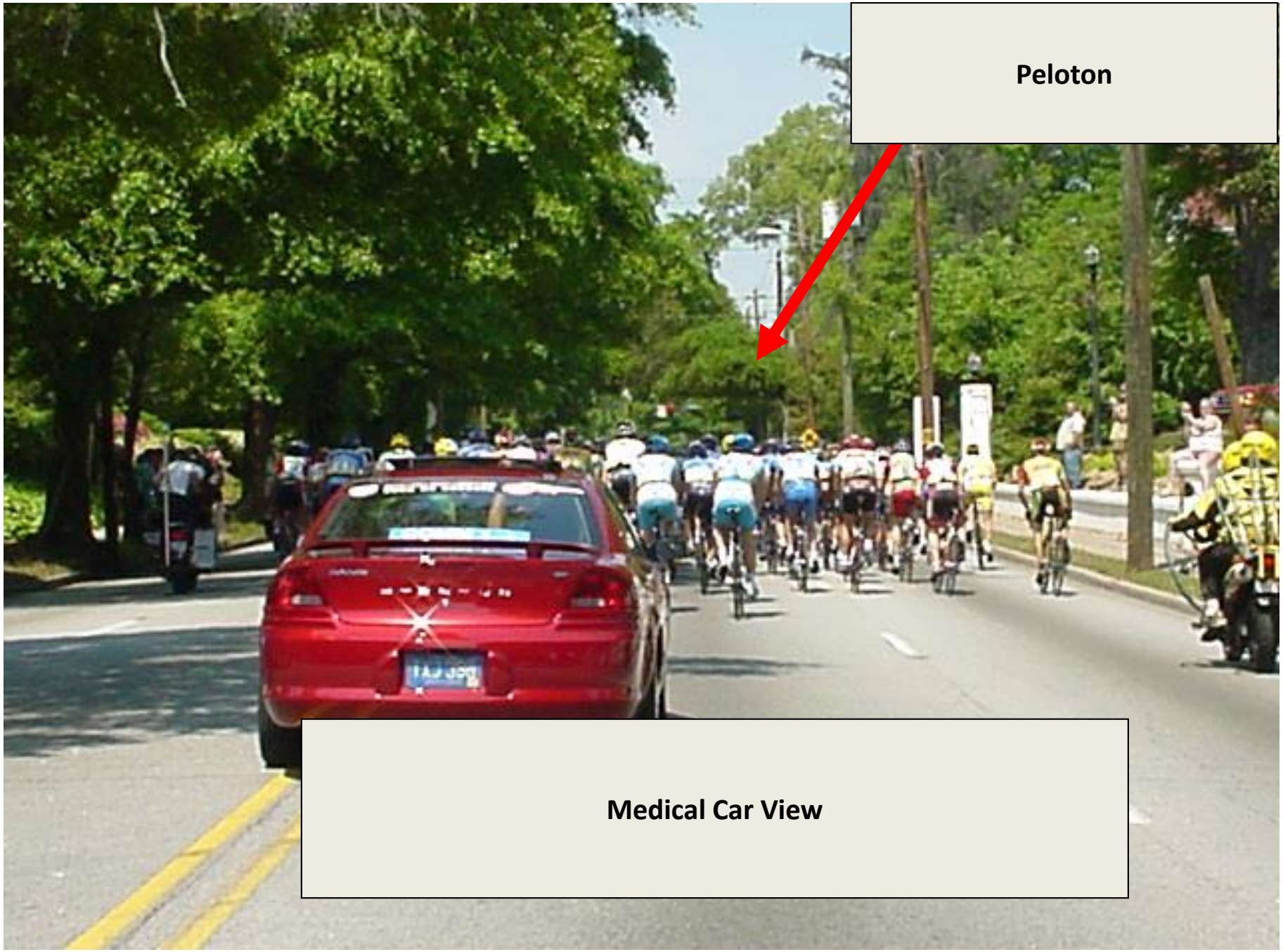
Race Day Operations

- Pre-Race Briefing/Load-out
- Starting Line Care/ Team Rounds
  - Alerts
- Race Functions
  - Start/Finish Crews
  - Caravan Operators
- Finish Line Care
- Medical Suite Care
  - Post-race briefing

Law enforcement vehicles and motor marshals staggered ahead of the race. Deployment depends on road conditions and race status.



Start/Finish


Peloton
Medical Car View

On-course encounter

	Peloton
• -00:05- “Caravan drivers, left turn ahead, left turn ahead, voyage a gauche, voyage a gauche”	0 km
• 00:05- “Current gap is 1:20 seconds…riders down, riders down, left hand side”	0.10 km
• 00:15- Rider capable are back up and riding	0.25 km
• 00:30- Medical Car arrives, makes contact, radios “Riders down MM 42.3 left”	0.40 km
• 00:45- Initial assessment	0.55 km
• 01:00- SAG arrives	0.70 km

On-course encounter

	Peloton
• 01:15- Medical Car-SAG Handoff and then leaves to rejoin Comm 1	0.90 km
• 01:35- SAG Assessment Continues	1.05 km
• 01:55- SAG Transport Decision	1.25 km
• 02:00- Ambulance Called up	1.35 km
• 04:00- Ambulance Loaded	2.65 km
• 04:30- SAG, Team Cars, Moto Comm, etc… leaves to rejoin Comm 4	3.00 km

Coordinated Care

- SAG usually then:
  - Approves and confirms transport destinations
  - Notifies receiving hospitals (ICS 206)
  - Updates Medical Car
  - Updates Race Radio as needed
  - Updates Teams as necessary
  - Updates Finish crew

- Documentation comes later (Encounter Form)

Disposition

- A rapid decision made with lot of information
  - The riders injuries and assessment
  - EMS resources available time
  - Hospital resources and
  - Race considerations

Communications

- Radio
  - Simplex
  - Repeater
- Cell
  - SMS
  - MMS
- Satellite
- EMS Based
  - CalCord
  - Viper
- Redundancy

Planning and preparation

- Know before you go…
  - Hemophilia
  - Coumadin
  - Allergies
  - Seizures
  - DDAVP

Supplies and responsibilities

- Athlete and staff needs
  - Nutrition
  - Injury – illness
  - What is your scope?
- Supply list
  - Stocking, restocking
- Bandaids

Injuries and Illness in a Professional Bicycling Stage Race

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Abstract

Logistically and clinically, medical coverage for professional bicycle stage racing is a challenging and unique task. We present data from two stage races in 2006 and 2007 with 3 more multi-day events being analyzed. Medical care was provided to professional athletes and support staff for 18 days including 12 days of racing. Each race covers hundreds of miles and provides significant challenges in the development of an emergency medical response plan. Medical coverage is provided for more than 150 racers, 50 team support staff and nearly 400 race staff/crew members in a caravan that averages more than 100 miles per day.

Introduction

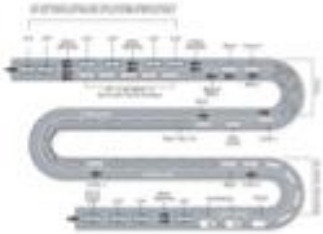
Emergency Medicine plays an important role in event medicine from conferences and meetings to stadium and traveling sporting events. The specialty is distinct and perfectly suited with the ability to competently handle and treat any injury or illness that arises. Medical care for professional bicycle stage racing is like any other event except it occurs at 25-60 miles per hour with a different route daily. Therefore in cycling, preparation and planning including not just medical supplies, but personnel and transportation are the keys to successful medical care.

Objective

To collect injury and illness data, location of treatment (i.e., race start, race, race finish, or hotel medical suite), participant role (i.e., athlete, staff, or spectator), and resources used in patient management.

Materials and Methods

This is an observational study. Data was prospectively gathered during each race using a standardized encounter form. Data was then abstracted and analyzed including complaint, participant role, location of treatment, number of visits, medications and supplies used during treatment.

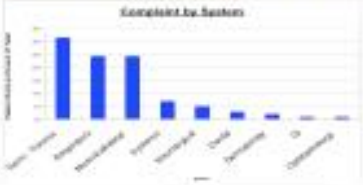


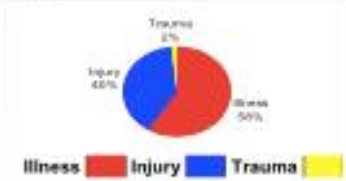
Results

A total of 84 patients were treated in 124 patient encounters. Seventy-three visits (59%) were due to illness and fifty-one (41%) were due to injury. Illnesses varied from chest pain and abdominal pain to multiple upper respiratory infections and one case of anaphylaxis. Injuries were primarily musculoskeletal in nature. There were only two major traumatic injuries involved in the 1200 miles of racing. Most of the treatment encounters (65%) were at the medical suite after the participants had returned to the hotel with the others scattered throughout the start line, on the road, from the medical vehicle while moving, and at the finish line. A comprehensive list of medications and supplies used for treatment is being analyzed. Additional data from several more races and patient encounters are being added to the database of cycling events to include another 20 racing days.

Discussion and Conclusion

Cycle stage races produce a variety of medical and traumatic illnesses. Injuries were primarily limited to extremity trauma. Minimal major trauma was encountered. Treatment was provided prior to, during, and after the race. However, the majority of patients were seen in the medical suite after each stage finish. The variety of treatment environments and the varied nature of patient complaints makes detailed planning and staffing critical in event coverage of this complex nature. This represents the largest database of medical encounters related to professional cycling stage races. Emergency physicians are ideal caregivers for such large events because of the variety of impromptu presenting complaints and the temporal and geographic demands of the medical coverage.

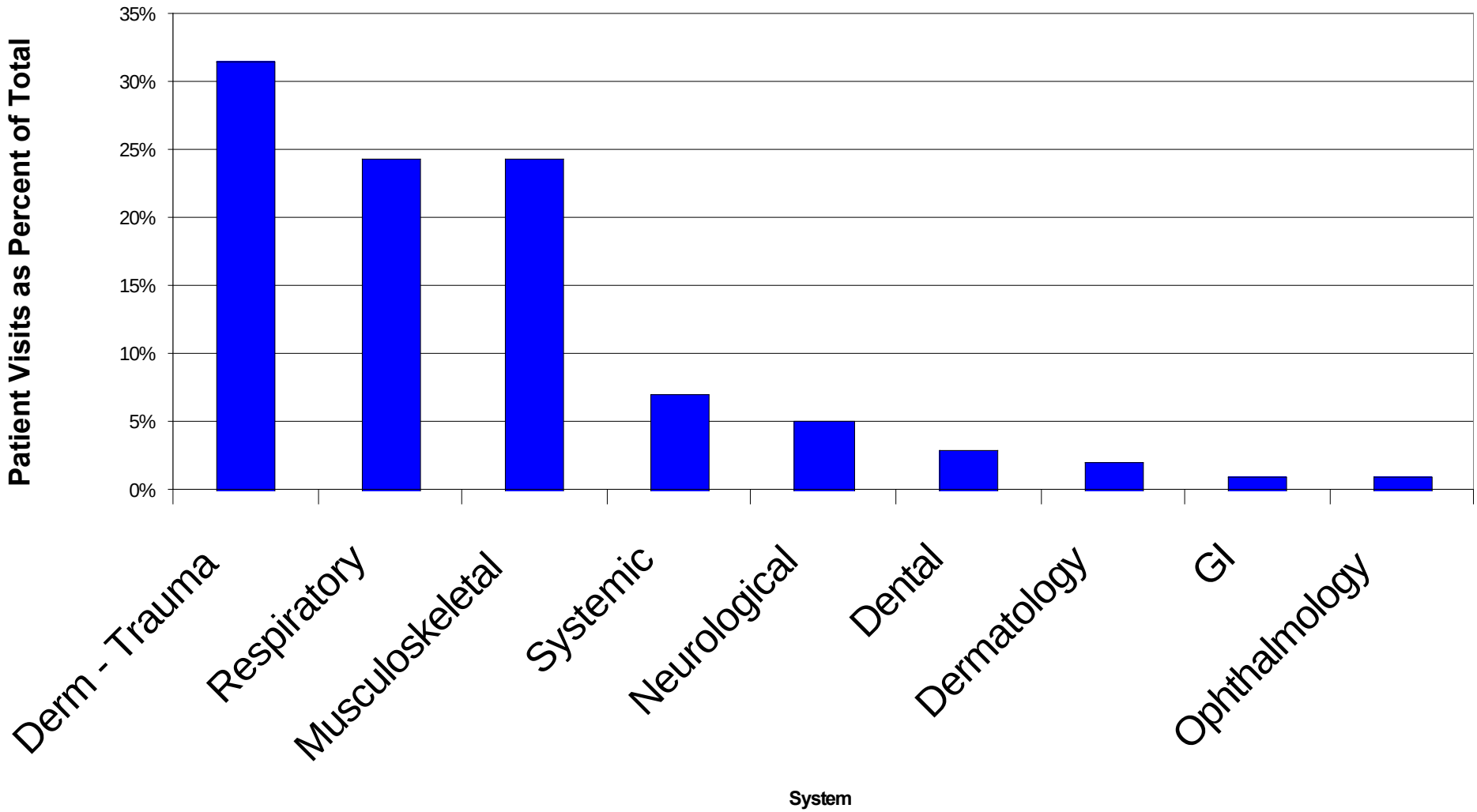


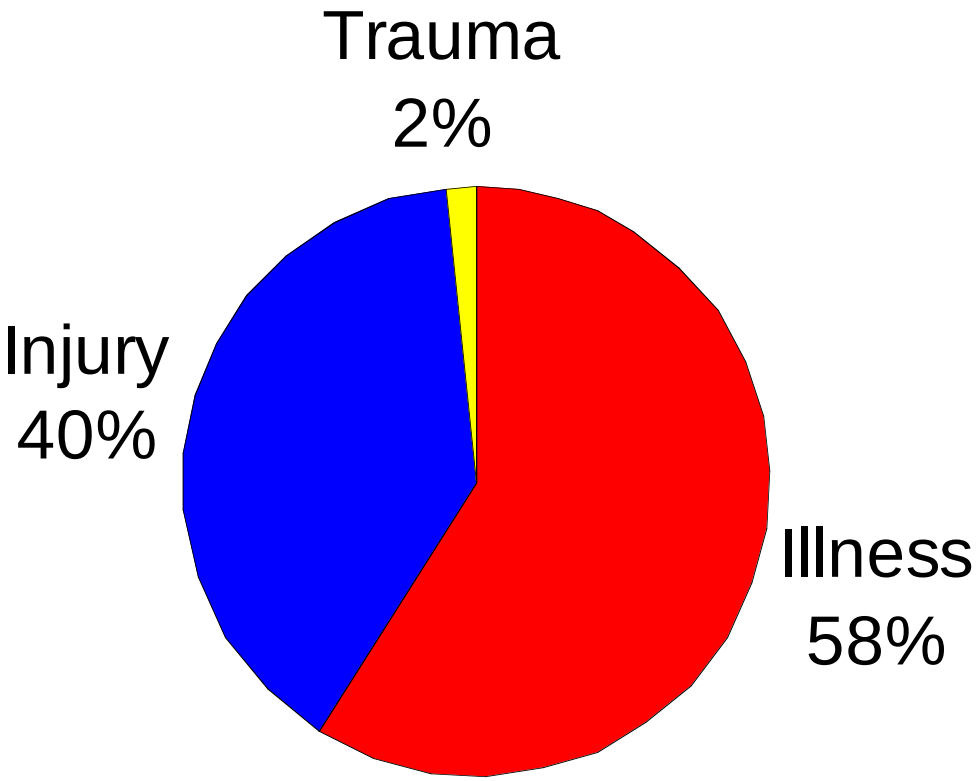


Acknowledgments

- Medalist Sports, LLC

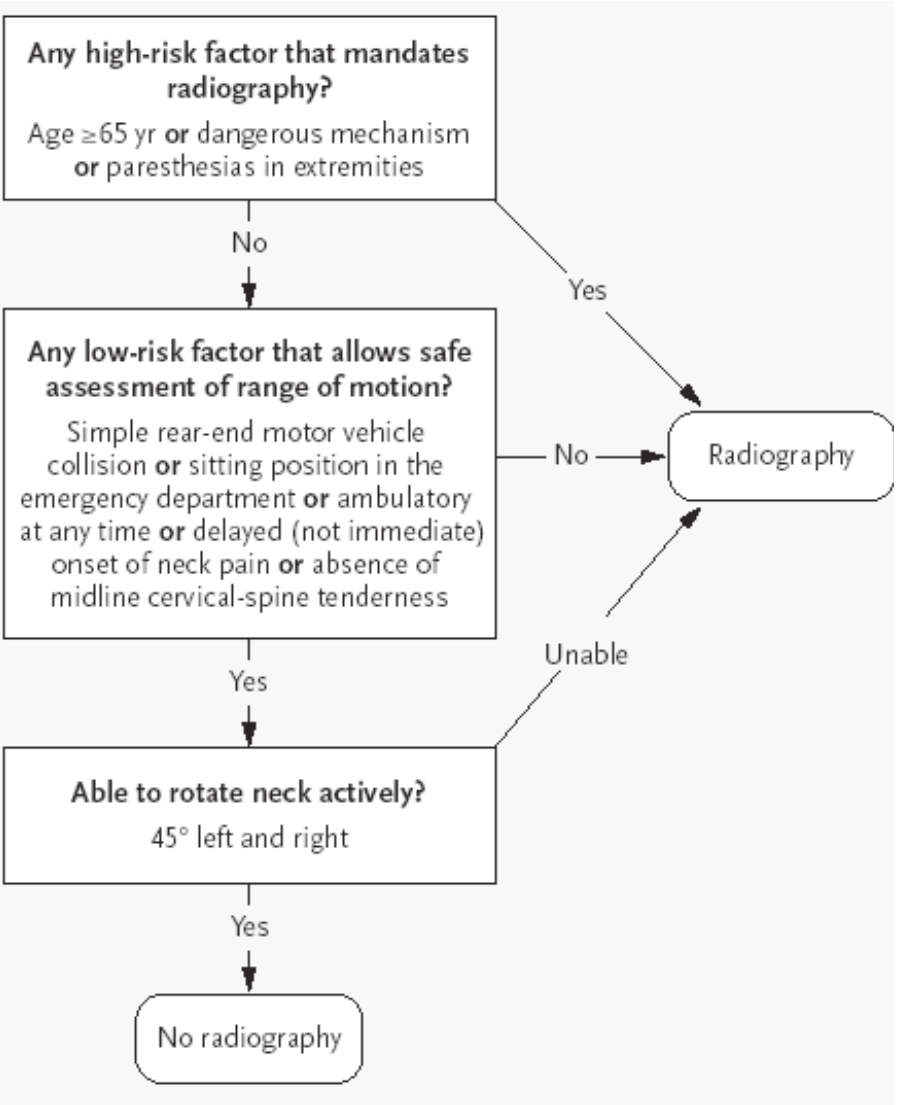
Complaint by System




Trauma
2%
Injury
40%
Illness
58%


AMRO

Canadian C-spine rule



NEXUS low-risk criteria

Table 1. The NEXUS Low-Risk Criteria.*

Cervical-spine radiography is indicated for patients with trauma unless they meet all of the following criteria:

- No posterior midline cervical-spine tenderness,†
- No evidence of intoxication,‡
- A normal level of alertness,§
- No focal neurologic deficit,¶ and
- No painful distracting injuries.‖

* Criteria are from Hoffman and colleagues.[26]

† Midline posterior bony cervical-spine tenderness is present if the patient reports pain on palpation of the posterior midline neck from the nuchal ridge to the prominence of the first thoracic vertebra, or if the patient evinces pain with direct palpation of any cervical spinous process.

‡ Patients should be considered intoxicated if they have either of the following: a recent history provided by the patient or an observer of intoxication or intoxicating ingestion, or evidence of intoxication on physical examination such as an odor of alcohol, slurred speech, ataxia, dysmetria, or other cerebellar findings, or any behavior consistent with intoxication. Patients may also be considered to be intoxicated if tests of bodily secretions are positive for alcohol or drugs that affect the level of alertness.

§ An altered level of alertness can include any of the following: a Glasgow Coma Scale score of 14 or less; disorientation to person, place, time, or events; an inability to remember three objects at five minutes; a delayed or inappropriate response to external stimuli; or other findings.

¶ A focal neurologic deficit is any focal neurologic finding on motor or sensory examination.

‖ No precise definition of a painful distracting injury is possible. This category includes any condition thought by the clinician to be producing pain sufficient to distract the patient from a second (neck) injury. Such injuries may include, but are not limited to, any long-bone fracture; a visceral injury requiring surgical consultation; a large laceration, degloving injury, or crush injury; large burns; or any other injury causing acute functional impairment. Physicians may also classify any injury as distracting if it is thought to have the potential to impair the patient's ability to appreciate other injuries.

Prehospital Validation of Canadian Cervical Spine Rule

- Vaillancourt C, Stiell IG, Beaudoin T, et al. The out-of-hospital validation of the Canadian C-Spine Rule by paramedics. *Ann Emerg Med* 2009. 54:663-71

Assessments on scene

- Rider down
- LOC, confused
- Out of race
- Who transports?
- Time/distance?
- BLS/ALS/Heli

Assessment - Hi how are you?

Evaluation

- Assessment is challenging
- Assessment of neurologic injury is the focus
  - Safety
  - ABCD
    - treatment
  - Transport decision
  - Communication
  - Re-integrating with the race

A roadside discussion…


TREK
RadioShack
THE SHACK
spider tech

Disposition

- A rapid decision made with lot of information
  - The riders injuries and assessment
  - EMS resources available and time
  - Hospital resources and time
  - Race considerations

Crowds

- Adds a huge layer of logistics
  - Complicates transport
  - Hinders communications
  - Adds potential patients
  - Need safety plans and support
  - Police, Fire, EMS
    - Integrated command


618-WEO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MOTO
8 OTOHQ


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TBI

- A minor portion of our injuries and illness at a race
- But our biggest fear
- Stage racing makes it even more complicated


msn
VERSUS
SD

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SPEAKERS AND FACULTY FROM:

TEAM TYPE 1 | UCSF | USADA | HARVARD UNIVERSITY | Duke UNIVERSITY | USA | GARMIN | cervélo

Traumatic Brain Injury in Cycling Evaluation Card *for racing and training*

Medicine of Cycling™

Following a crash, assess for the following:

"High Risk" Features

- → Significant head/neck trauma
- → Seizure
- → Skull fracture
- → Persistent nausea/vomiting
- → Severe or worsening headache
- → Disorientation lasting 30 minutes or more
- → Inability to speak or swallow
- → New clear fluid leaking from nose or ears
- → Inability to walk/ride in a straight line

Orienting Questions

- → Can you tell me how you crashed?
- → What city is this?
- → What lap or stage are you in?
- → How far are you from the finish?
- → Was there a breakaway in the race?
- → What's in your jersey pockets?
- → Can you name the months of the year backwards, starting with December?

Has any "High Risk" features? (see inset)

- YES → STOP →
  1. Activate external emergency response
  2. Spinal precautions
  3. Emergency medical transport
- NO ↓

Was unresponsive at any time?

- YES → STOP → Withdraw for medical evaluation
- NO ↓

Cannot answer 5+ correct orienting questions (see inset)

- YES → STOP → Withdraw for medical evaluation
- NO ↓

1. Close rider follow-up
2. Rider and staff to assess for signs and symptoms of concussion (see other side)

Ver. 1.2

Regardless of the cyclist's ability to continue to race or train, any athlete suspected of concussion should be observed by teammates, managers, friends and/or family for signs and symptoms of a concussion. Athletes with symptoms of concussion or other concerning changes in their health should seek medical attention and avoid activities which exacerbate these symptoms.

Early and ongoing signs and symptoms may include, but are not limited to:

Physical Features

- → Loss of consciousness
- → Headache
- → Pressure in the head
- → Neck pain
- → Nausea
- → Vomiting
- → Blurred vision
- → Dizziness
- → Prolonged or greater than expected fatigue

Cognitive Features

- → Confusion
- → Feeling slowed down
- → Sensitivity to light
- → Sensitivity to noise
- → Impaired balance
- → Feeling in a fog
- → Difficulty concentrating
- → Difficulty with memory

Behavioral Features

- → More emotional
- → Irritability
- → Restlessness
- → Drowsiness
- → Sadness
- → Anxiety
- → Nervousness
- → Sleep disturbances
- → Personality changes

Ver. 1.2

In case of emergency, call the local emergency number. The information on this card is not a replacement for medical evaluation. Please refer to the full Concussion in Cycling Consensus Statement at www.medicineofcycling.com or other current concussion resources for more information.

US Pro Champion 2012

Crash lessons…


bmc
SWITZERLAND

Stage 1 finish USPCC 2015

Interesting wound care

Lessons learned

- Language barriers
- New team members
- Referring hospital arrangements


COLORADO
85 UPC
RX 350

Media interactions

- Press conferences
- Social Media
  - You are watched!
- Meningitis
- Injuries and careers
- Web information and families
- Have a Media plan
  - And prepare for it to fail

Seatbelts…

Its Dangerous!

Anti-Doping- very important in cycling

- Know USADA and WADA resources
- DRO online
  - http://www.usantidoping.org/misc/drug_information.aspx

- Athletes are responsible but we have an important role

USADA
U.S. Anti-Doping Agency
Integrity. Health. Sport.

WORLD
ANTI-DOPING
AGENCY

Summary

- Event coverage is an exciting and fun endeavor
- It requires careful planning and consideration
  - Risk assessment and strategies
  - Response plans
  - Staffing plan
  - EMS/Transport plan

New fans!

Thank you!

Acknowledgements

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- ktborg@gmail.com