Andrews Institute
Injuries in Football 2017

Friday Night Medical Time Out
Pre-Game Checklist

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Team Physician, Concord University
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Medical “Time-Out”
Prior to Games and Practice
• NATA petition to NCAA
• EAP Venue specific
• On the Field – EMS communication and readiness Head and Neck
• Athlete Collapse – EHS, SCA and SCT
• Spectator Coverage

Maximize Time
Minimize Chaos and Confusion
Enhance Emergency Action Plans

Be Prepared
• Stretcher on Track
• Equipment ready to go
• Jacksonville Sports Medicine 25 yard line
• Visibility MTO Moms

Safe High School Sports Play
Friday Night Medical Time Out

Communicate

Who Should be there?
- EMS
- Athletic Trainers
- Team Physicians
- Game Officials
- School Officials
- Law Enforcement

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Sports Trauma Trends
- Head / Neck Case
  CTE now defined, NFL Autopsy cases
  High School RTP, CDC Focus
- Heat Stress Injury
  Performance enhancement supplements
  ECAST syndrome
- Asthma Emergencies
  More athletes with inhalers
- Sudden Cardiac Arrest
  Unrecognized congenital conditions
  Cardiac concussion, ECAST

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2012 Concord University Game Day Medical Time Out

EMS Phone Contact
EMSI-325-4077
Back Up EMS Phone: 304-425-4077
Hand Signal: ACLS to Field X
Cheerleader Injury Team
Spectator Illness Response Plan
AeroMedical Land Zone
Athens Fire John 320-5509
CU Security Sgt Moulder 888-1249

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Southern West Virginia
Pilot Study 2013 High School Football EMS Checklist Prior to Kickoff

Atlanta Public Schools
Pilot Study 2014 High School Football EMS Checklist Prior to Kickoff

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Medical “Time-Out”

Prior to Kick-Off – Friday Night Lights
- On the Field – EMS communication and readiness Head and Neck
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- Cheerleader Injury strategies

Prepare for downed athlete airway control

“Fishbowl” Arena

EMS Transport Checklist (GSC)
Medical “Time-Out”
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2007 NATA Position Paper
SCA in Athletes Summit (Courson, Drezner)
- Most cases occur with Basketball, Football and Little League Baseball
- 9 to 1 Male/Female
- Athlete Collapse – Suspect SCA
- Sentinel Seizure awareness
- AED’s with time to shock < 4 minutes
- Coach AED certification
- Schools need a formal Emergency Medical Plan
- Rapid ACLS availability

The Faces of SCA

Sickle Cell Trait in Sports
- Traditionally not a risk factor
- Mandatory NCAA testing SCT
- Exertional Sickling Collapse recently described
- Syndrome of Fulminant Ischemic “Explosive” Rhabdo
- ARF with deterioration to PEA with K

Medical “Time-Out”
Prior to Kick-Off – Friday Night Lights
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SCA - Common Locations
1. Casino
2. Airport
3. Sport Venues
4. Golf Course
Medical “Time-Out”

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Pediatrics (January 2006) Study

- Injuries from 5-18 year olds doubled between 1990 and 2002.
- Athletes are bigger/stronger/faster across the board than 10-20 years ago.
- More aggressive maneuvers
- Kids are starting activities at younger ages. Do they have the skill level to do what they’re trying to do? Are they physically capable?

Concord University
Division II Fall 2016

20 ImPACT testing post concussion and “Sub-concussive” Injury
- Football = 10
- Cheerleading = 4
- Soccer: Women = 2, Men = 1
- Basketball, Track, VB = 1

The Checklist
Medical Time Out

“Know Your Team Players”

STAT is MTO Ready

“Roster Medicine”

STAT EMS – Wyoming County, WV
- 33 - circle # with Concussion Hx
- 33* - star # with Asthma Hx
- 33* - Box # with Heat Stress Risk
- John Doe - Underline Name with SCT
Aero Medical MTO Ready

Safe High School Sports Play

What’s Next?
- WV EMS statewide protocol
- 8 person backboard
- SCAT-3 symptom checklist
- Sentinel Seizure, Agonal Resp awareness
- C-Spine - on-site equipment removal
- Rip-cord shoulder pads – chest exposure
- AL, FL, GA, TX regional EMS protocol
- Team Paramedic consideration

IS THERE A PARAMEDIC ON THE SIDELINE??
- Head and Neck Trauma
- Athlete Collapse – SCA
- Torso Trauma – Chest and Abdomen
- Sickle Cell Trait – Explosive Rhabdo
- Second Impact Syndrome
- Commotio Cordis
- Spectator SCA
Sports Trauma: Physician, EMS, Athletic Trainer Teamwork

Atlanta 1996 Sports Trauma Decisions

Rule of 100
Initiate VS trending if:
- Pulse > 100
- Temperature > 100
- Systolic BP < 100

VS Trending
- Serial vital signs over 30 mins
- Monitor heart rate, BP and temp
- Response to rest, hydration, cooling, and other interventions

Sports Trauma Management

Sports Trauma VS Trending

Initial VS
VS Trending Over 30 minutes
+ Team Physician
Rule of 100
+ ER

VST - Sport Trauma EMS-ATC Focus

- Initial Vital Signs
- Rule of 100
- Vital sign Trending
  - Heat stress
  - Unconscious athlete
  - Asthma attack
- Pearls and “When to Worry”
- Sideline Gadgets

Heart Rate Trending

Tachycardia: Heart rate > 100
- Sinus Tachycardia
- Supra-ventricular (SVT)
- Ventricular (VT)

“Sports tachycardia” - sinus tachycardia response from exercise
Heart rate Trending

Sports Tachycardia Pearl
- Sinus tachycardia from vigorous sports play improves over 15 minutes in most cases
- Persistent tachycardia is cause for concern Rule out hemodynamic instability
- Cardiac monitoring will determine if supraventricular or ventricular tachycardia is present

Cardiac Output = Heart Rate $\times$ Stroke Volume (5 liters @ rest)

CO = HR $\times$ SV
- Rapid replacement of intra-vascular volume will result in lower heart rate in dehydration and blood loss

Body Temperature Trends
- Temperature readings are dependent on climate and clothing
- Endurance sports vs August FB
- Cooling and hydration should result in rapid drop over 30 minutes
- Temp $>100$ at 30 minutes should be considered for ER transport

Initial Vital Signs: Temperature
- Tympanic temperature or oral
  $>100$ degrees suggests heat stress
- Rectal temperature most accurate
- Heat stroke occurs with temperature 103-105

Sports Trauma: Physician, EMS, Athletic Trainer Teamwork

Game Day
High School
Medical Care

ATLS
ACLs
NATA
Athletic Trainer
EMS
Team Physician
Sports Concussion

- **NFL** - 2012 Independent Physician for RTP
  Media – Early Dementia, CTE
  2013 Sideline Independent Neuro Exam
- **College** – Neuro-Cognitive test Pre-Season
  Repeat Post-Injury; “Medical” Time Out - NATA
- **High School** - 2014 All States with RTP Legislation
  Pre-Season Video, Second Impact Syndrome
- **Youth** - CDC Coach / Parent Video
  *In Emergency Department visits"
Is Football Safe ?

Spring League Greenbrier
VICUS Zero 1 Helmet

24 ImPACT testing post concussion and “Sub-concussive” Injury
- Football = 12
- Soccer: Women = 4, Men = 2
- Softball = 2, Baseball = 3
- Basketball, Track, Cheerleading = 1

2017 Spring League
XENITH Helmet

Concord University Fall 2015

VT Sub Concussive Research
- Helmets with accelerometer
- Sideline Box with recordings
- Many Hits with + 40g
- Physician Beeper set @ 50g
- Average 4 + 80g Hits Season
- # Hits position specific
- 4 “clinical” concussions
2017 Spring League
ZENITH Helmet

Spring League Greenbrier
VICUS Zero 1 Helmet

Protective Equipment

Q30 Collar
Concussion Protection
- 2015-16 Saint Xavier HS Football Cincinnati
- 2016 Seton High School Girls Soccer
- Dr Julian Bailes, Chairman Neurosurgery, North Shores Hospital
- Reduce the brain slosh/slide with rapid acceleration and deceleration
- Woodpecker “Inspired”

Q30 Collar
Protective Equipment
Cincinnati High Schools
- Pre Season Baseline MRI
- Post Injury repeat MRI and Concussion Biomarkers
- DOD Pilot projects
- Dr Justin Frasier, UK Neurosurgery, POC biomarker STABILIZER 1

Organize – Downed Athlete
- Who?
- What?
- Where?
- When?
- How?
Catastrophic Injury by the numbers

- 2008 SIS deaths in NC
- death HS Football 12.2/yr most indirect
- 1/100,000 Football participation
- 3 million youth
- 1.1 million HS
- 100,000 college, pro

Hank Gathers SCA

- Medication had been decreased due to side effects
- Cause of death -HCM
- Cardiac monitor defibrillator legal issue: $32 Million law suit

Commotio Cordis Update

- Cardiac Concussion most common in youth and adolescent athletes
- 2001 update - 128 cases 84% cases fatal
- Early defibrillation with on site AED only effective treatment
- AED documented in 41 cases, 19 survived = 46 %
Body Parts Commonly Injured

- Neck
- Head
- Low Back
- Trunk

Sports Venue Pre-Game Checklist

Safe High School Sports Play

Sports Trauma: Physician, EMS, Athletic Trainer Teamwork
28th Annual Jose Ricard, MD
Family Medicine and
Sports Medicine Conference

Medical Time Out
Safe High School Sports Play

Dr. Jim Kyle, FACSM
Team Physician, Concord University
Director ED, Beckley ARH Hospital, WV
WV Region 1 EMS Medical Director

CDC Focus - Sport Concussion