An Independent Evaluation of Procedures and Protocols Related to the June 2018 death of a University of Maryland Football Student-athlete

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Introduction

The National Collegiate Athletics Association (NCAA) claims college sports equip young people with skills to succeed in the classroom in competition, and in life (http://www.ncaa.org/student-athletes/value-college-sports). The value of sports has long been embroiled in students as they seek the guidance and instruction sports provide. The NCAA values graduation as important as winning on the playing field. Intercollegiate sports are important venues for student-athlete learning, competition, and success. The NCAA promotes the well-being of student-athletes while learning leadership, confidence, discipline and teamwork in their respective sports.

Although intended to be a learning experience, collegiate sports are in a tremendous crossfire today with increased exposure from social and public media, external pressures created by the the influx of monies being secured by sports, and general concern over compensation and student-athlete welfare. The death of a football student-athlete at the University of Maryland in June 2018 is a reminder of the importance of keeping appropriate medical care of student-athletes at the forefront of sports and athletic competition.

While no review is cut and dry within the specific scope of a project, many factors are unable to be controlled and consequently can effect the objectivity of the process. The inability to work in a vacuum to conduct such a review independent of the media interest is difficult and requires diligence of an independent reviewer to ensure a review is representative of fact and not opinion. Since beginning this project, the discovery and review of documents has been challenged by the inaccurate leaks of information. This report reflects information provided directly from the University of Maryland athletics administration and from one on one interviews with the people directly associated with the tragic event on May 29, 2018 that ultimately resulted in

an untimely death of Jordan McNair which was later determined to be directly related to heat stroke.

Heat-related illness requires significant attention as early recognition and treatment is proven to increase survival outcomes and consequently increasing preventable fatalities. For example, after Korey Stringer's death (August 1, 2001) in a preseason workout, and the subsequent creation of the Korey Stringer Institute which is dedicated to the increased awareness of heat-related illness, the NFL has reported no exertional heat related deaths since Korey's death in 2001. According to the Annual Survey of Football Injury Research (http://nccsir.unc.edu/reports/) Table IV – Heat Stroke Fatalities from 2000 to 2017, there have been 49 heat strokes reported from high schools, colleges, professional sports, and sandlot sports.

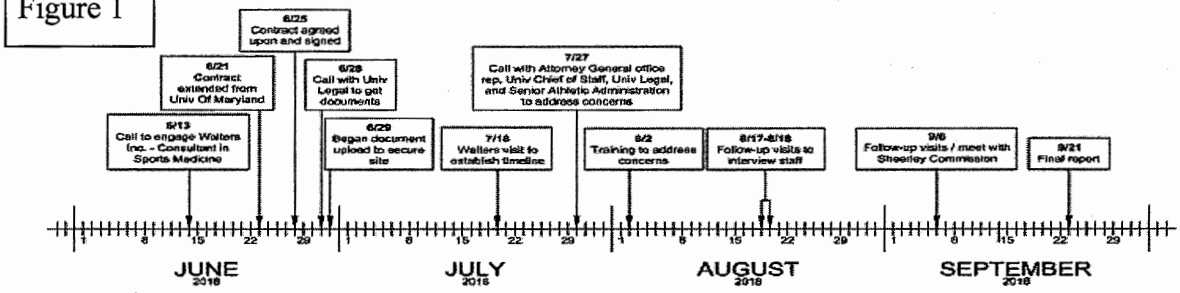
Scope of Work

This project is a request by the University of Maryland to review procedures as well as established policy within the athletics department specific to athletic training and the care of university student-athletes. A call was received the morning of June 13, 2018 to engage Walters Inc. - Consultant in Sports Medicine to evaluate the incident which occurred on May 29, 2018. A proposal was submitted, accepted and work on the project was engaged June 25, 2018.

The results of this review are not intended to establish a legal standard of care, but to assist University of Maryland Athletics Department senior administration review of procedures and protocols that impact the health and safety of student-athletes at the University of Maryland. All documents provided will be reviewed and compared to established sports medicine industry standard. Where industry standard does not exist, recommendation on best practices will be pro-

vided based on current literature, complete with citations as applicable. A timeline of the project is presented as Figure 1.

Figure 1



The University of Maryland's Office of General Counsel and Department of Intercollegiate Athletics directed as follows:

a) perform an independent evaluation of ICA's procedures and protocols related to the June 2018 death of an University football player as detailed more specifically in Exhibit A ("Scope of Services").

b) review the football program's procedures and protocols involving student-athlete health and safety applicable to:

(1) planning and conducting team conditioning and practice sessions and

(2) for responding to health emergencies during or after those sessions.

In order to establish context, it is important to understand heat stroke. Exertional heat stroke is a medical emergency and the most severe of exertional heat illness. Signs and symptoms of exhertional heat stroke can be characterized by a varied presentation of the symptoms, with the two main criteria being rectal temperature greater than 104-105°F (40°C) and central

nervous system dysfunction (irrational behavior, irritability, emotional instability, altered consciousness, coma, disorientation or dizziness). Additional symptoms can include headache, confusion, nausea or vomiting, diarrhea, muscle cramps, loss of muscle function/balance, inability to walk, collapse, staggering or sluggish feeling, profuse sweating, decreasing performance or weakness, dehydration, dry mouth, thirst, rapid pulse, low blood pressure, and quick breathing (https://ksi.uconn.edu/emergency-conditions/heat-illnesses/exertional-heat-stroke/heat-stroke-recognition/).

Acclimitization is vital to prevent exertional heat illness. The gradual increase in practice intensity and equipment worn has been established to address acclimitization. Increasing breaks with modification of the work-to-rest ratio also help with acclimitization.

The recognition of exertional heat illness includes critical components of identification including profound central nervous system dysfunction and elevated core temperature greater than 105°F. Rectal temperature is an accepted method and the gold standard of obtaining an immediate and accurate measurement of core body temperature in an exercising individual. Once the exertional heat stroke is identified, aggressive treatment must be ensued to lower core body temperature to less than 102.5°F within 30 minutes. Cold water immersion is the most effective means to treat a patient with exertional heat stroke.

This evaluation addresses specific procedures including implementation, comprehension, and compliance of established policies. This report excludes any assessment of specific personnel and consequently does not include any recommendations associated with staffing. The essential steps identified to complete this report included the following:

1. Establish a timeline to review University documents provided regarding athletic training policies and procedures,
2. Schedule interviews with staff that were present at the time of the incident until transfer to advanced medical personnel.
3. Arrange a trip to College Park, Maryland July 18 – 20, 2018 to allow familiarity of the scene, review videos, and talk with personnel -directly associated with the event to further establish a more accurate timeline of events. Initial interviews with staff members were conducted at this time.

A general introductory in-person meeting was held with the Athletic Director and Senior Associate Athletic Director/Internal Operations in order to introduce the consultant to the Assistant Athletic Director - Director of Football Performance, Assistant Athletic Director for Athletic Training, Associate Athletic Director for Sports Performance, Head Football Athletic Trainer, and two Assistant Athletic Trainers. All of these personnel except the Athletic Director and Senior Associate Athletic Director/Internal Operations were on the field for the incident of May 29, 2018. Follow up individual sessions were scheduled to allow the consultant to ascertain information specific to the development of the timeline of events. Based upon initial document review and work to establish a timeline, four immediate concerns were identified and shared with the senior administration July 27, 2018. Due to the timely nature of the procedures, and concern for the start of the new academic year and initiation of team practice sessions, an intermediate verbal report was given to allow critical procedures to be immediately addressed.

1. The injury evaluation did not include any assessment of vital signs. Specifically, core temperature was not established which ultimately is a critical part in identifying a rapid decline in the athlete's physical state.
2. Treatment provided did not appropriately address the escalating symptoms of heat-related illness. The prehospital care of exertional heat illness should include rapid recognition and treatment of signs and symptoms associated with this condition. No vital signs were noted including core temperature.
3. No apparatus was used for prompt cooling of the patient May 29, 2018. This is discussed in the literature as best practice and needs to be part of the University of Maryland Sports Medcine Services Staff Manual. The current procedures does not include core temperature assessment but does include aggressive cooling in the event of an identified exertional heat illness.
4. Failure to provide directions to EMS to the scene and designate an individual to flag down EMS and direct to scene. There was confusion as EMS arrived in the Gosset parking lot while the target point was the field level driveway as referenced in the EAP in the 2017-18 Med Manual E-Book and Staff Administration E-Book.
5. Once the patient's condition deteriorated, and respiratory aids were needed, the trauma bag had to be retrieved from the practice area as equipment (manual suction or oxygen) was not available in the Gosset Athletic Training Room.

Review of Policies and Practices

The following policies were reviewed to compare to best practices. The policy design and implementation relevant to sports medicine was the purview of the Assistant Athletic Director for Athletic Training. As he and the team physicians noted, there is significant input from several staff members. Although the content in the "e-book" is a comprehensive and thorough as it pertains to policies and procedures, it is also a cause of significant complication related to its 600-plus pages. The current collection of procedures is difficult to navigate due to the enormity of the document and consequently makes it difficult to ensure employee retention of these policies.

A printed copy of the University of Maryland Sports Medicine Manual (2017-18 Sports Med Manual E-Book and Staff Administration E-Book_downloaded_08_08_2017) was accessed for review. A printed copy of this document was provided by Associate Athletic Director for Sports Performance during our initial meeting in New Orleans on June 26, 2018. The manual appears organized. Per the Scope of Work, the manual was reviewed for completeness and content relative to sports medicine, athletic training, and strength and conditioning industry best practices. The review team of physicians, athletic trainers, and strength and conditioning specialists were utilized to reference current procedures within the University of Maryland athletics.

Emergency Action Plan

The University of Maryland Sports Medicine Emergency Action Plan (EAP) meets guidelines but staff failed to implement established best practices guidelines (Andersen, Courson, Kleiner, & McLoda, 2002):

1. A comprehensive written EAP has been developed by the University of Maryland Athletic Department.
2. The EAP identifies the personnel involved in executing the plan.
3. The individuals involved in carrying out the EAP have been trained in automatic external defibrillation, cardiopulmonary resuscitation, first aid, and prevention of disease transmission. There is no evidence or documentation of training and practice of the EAP. Specifically, when interviewing Assistant Strength Coaches on August 2, 2018, there was no recall of EAP training for their staff.
4. Specific emergency equipment needs to be identified and validated daily for readiness and availability. According to the University of Maryland Staff Manual, the following equipment will be available on-site at every practice session:
   a. Athletic Training Kit
   b. Emergency phone numbers and student-athlete emergency information
   c. Land-line or cell phone and / or 2-way radio/ walkie-talkie (no radio communication was available for this incident)
   d. Water
   e. Ice Bags

   Items included in the Trauma Bag utilized on May 29, 2018 were reported as:

   a. AED w/ Back Up Pads
   b. Oxygen Tank
   c. Oxygen Masks
   d. Epi Pen

e. Inhaler

f. Inhaler Spacer

g. Glucose Tablets/Gel

h. Blood Pressure Cuff

i. Stethoscope

j. Pulse Oximeter

k. Gloves

l. Sterile Gauze

m. Thermal Blanket

n. CPR Masks

o. Artificial Airways

p. Scissors

q. Bag Valve Mask

r. Manual Suction

s. Peak Flow Meter

t. Cervical Collar

u. Razor

v. Towels

w. Copies of EAPs

The following items were <u>not</u> available and should be added:

a. Tub suitable for cold water immersion (The Heat Illness Management Plan does reference use of active cooling treatment via cold waters immersion for the treatment of heat stroke).

b. Rectal thermistors

c. Access to copious ice on-site

4. The EAP should include emergency equipment that may be needed for appropriate care including the location of the equipment.

5. The EAP identifies a clear method for communication to the appropriate emergency care providers and identifies the mode of transportation that should be requested for an injured patient.

Though the EAP meets standards, there are some concerns outlined as follows regarding implementation of the EAP on May 29, 2018:

- Hospitals for referral of specific injuries or illness should be part of the EAP (Washington Aventis or other appropriate facility).
- Details of this EAP were not followed including sending staff person to meet EMS.
- The EAP was not initiated in response to the presentation of escalating symptoms of exertional heat illness.
- A critical component of the EAP is communication of the plan and practice of the plan. There should be detailed sessions of education, training, and practice specific to the EAP. This must be orchestrated and appropriately planned for all parties involved in care including coaches and administrators. All training sessions should be logged and recorded if possible to allow further review and creation of plans to address deficit or negligent care areas.

- The inclusion of a coverage model requires the creation of a document description of roles, expectations, and implementation of the EAP. It also allows for training plans and validation of the educational process. The EAP is critical to emergency care. The coverage model should be a written understanding of all roles and responsibilities of personnel relative to incidents occurring within the department. The coverage model provides a document of understanding for administrators, coaches and healthcare providers specific to responsibilities related to emergency incidents. This document should be a dynamic document;
- The daily administration of a "medical timeout" will facilitate daily review of the EAP with any last minute changes.
- The EAP should include location of AEDs at all venues. The AEDs should be strategically located to accommodate a three-minute response time for all sites.
- Finally, the last component of the EAP is the communication of the plan to all parties including the care team, local police, fire fighters, EMS and administrators. This should be a living document with updates as indicated specific to facility modifications, construction, or other impending situations.

Exertional Heat Illness

Standards for core temperature assessment and utilization of cold water immersion in the event of exertional heat stroke were requested from a variety of collegiate and professional sports teams. Athletic trainers and other allied health care professionals should use best practices to establish onsite EAPs for their venues and athletes. The primary goal of athlete safety is addressed through the appropriate prevention strategies, proper recognition tactics, and effective treatment plans for Exhertional Heat Illness (EHI). Athletic trainers and other allied health care

professionals must be properly educated and prepared to respond in an expedient manner to alleviate symptoms and minimize the morbidity and mortality associated with these illnesses (Casa et al., 2015).

Exertional heat stroke (EHS) is one of the most common causes of sudden death in athletes. It also represents a unique medical challenge to the prehospital healthcare provider due to the time sensitive nature of treatment. In cases of EHS, when cooling is delayed, there is a significant increase in organ damage, morbidity, and mortality after 30 minutes, faster than the average EMS transport and ED evaluation window (Belval et al., 2018).

Certified athletic trainers and other allied health providers should use these recommendations to establish on-site emergency plans for their venues and athletes. The primary goal of athlete safety is addressed through the prevention and recognition of heat-related illnesses and a well-developed plan to evaluate and treat affected athletes. Even with a heat-illness prevention plan that includes medical screening, acclimatization, conditioning, environmental monitoring, and suitable practice adjustments, heat illness can and does occur. Athletic trainers and other allied health providers must be prepared to respond in an expedient manner to alleviate symptoms and minimize morbidity and mortality (Binkley, Beckett, Casa, Kleiner, & Plummer, 2002).

Compared with rectal temperature (the criterion standard), gastrointestinal temperature was the only other measurement that accurately assessed core body temperature (Casa et al., 2007). Oral, axillary, aural, temporal, and field forehead temperatures were significantly different from rectal temperature and, therefore, are considered invalid for assessing hyperthermia in individuals exercising outdoors in the heat (Casa et al., 2007).

Ice-water immersion and cold-water immersion are recommended for treating the hyperthermic individual (Clements et al., 2002). Case reports show that immediate and continual dousing of the patient, combined with fanning and continually rotating cold, wet towels, represents a viable alternative until advanced cooling is possible (McDermott et al., 2009).

Some student-athletes may be more susceptible to heat illness. Susceptible individuals include those with sickle cell trait, inadequate acclimatization or aerobic fitness, excess body fat, a history of heat illness, a febrile condition, inadequate rehydration and those who regularly push themselves to capacity. Also, substances with a diuretic effect or that act as stimulants may increase risk of heat illness. These substances may be found in some prescription and over-the-counter drugs, nutritional supplements and foods (Binkley et al., 2002). There should be a standard procedure for the annual education of student-athletes utilizing any stimulant medication or related medication with potential impact on heat tolerance or other indications for exercise tolerance. This should be appropriately documented in the medical file.

Treatment for heat exhaustion includes: removal from activity, taking off all equipment and placing the student-athlete in a cool, shaded environment. Fluids should be given orally. Core temperature and vital signs should be serially assessed. The student-athlete should be removed from the environment and cooled by fans and ice towels, and use of IV fluid replacement should be determined by a physician (Casa et al., 2015).

Treatment for heat stroke includes: activation of the EAP, assessment of core temperature/vital signs and immediate cooling of the body with cold water immersion (Belval et al., 2018; Casa et al., 2015). The NATA's Inter-Association Task Force recommends "cool first, transport second" in these situations (Parsons, 2015). The prehospital care of exertional heat ill-

ness should include rapid recognition of exertional heat stroke in those athletes that have collapsed to aggressively recognize signs and symptoms often associated with exertional heat illness. Exertional heat stroke often present with classic signs of hyperthermia (over 40.5° C/ 104.9° F) and central nervous system dysfunction. The core temperature is best assessed with assessment of rectal temperature (Belval et al., 2018; Casa, Armstrong, Ganio, & Yeargin, 2005; Casa et al., 2007; Casa et al., 2015; Parsons, 2015). In the event of hyperthermia, the patient should be cooled immediately (within 30 minutes of presentation) until rectal temperature approximates 38.6° C/101.5° F (Belval et al., 2018).

The University of Maryland Sports Medicine Heat Illness Management Plan meets established best practices guidelines in the following areas:

1. The categories of exertional heat illness are identified.
2. The responsibilities of the athletic training staff are identified in regards to the recognition and management of exertional heat illness.
3. Athletic department staff members (athletic training, strength and conditioning coaches) provide education on hydration levels and techniques.
4. Fluids are accessible to student-athletes in order for them to meet appropriate hydration levels.
5. A heat illness risk factor scale is included in the policy.
6. The policy includes Wet Bulb Globe Temperatures and heat index levels that may increase the risk of exertional heat illness.
7. Emergency care for exertional heat illness is included.

Though the exertional heat illness procedure meets standards, there are some concerns outlined as follows regarding implementation of care on May 29, 2018:

- The monitoring of Wet Bulb Globe Index addresses best practice within exertional heat illness. Though Wet Bulb Globe Index is identified as best practices, no measures were recorded at the University of Maryland on May 29, 2018. Weather statistics were obtained from WeatherOps. There was a failure to obtain venue specific weather statistics.
- There was the failure to identify escalating symptoms associated with exertional heat illness including removing the athlete from the field, assessing vital signs, and identifying the condition and aggressively treating the patient's elevated core temperature.
- Equipment specific to the EAP should include a trauma bag for each venue. A cold water immersion device needs to be established for each conditioning and practice activity. This equipment is part of the appropriate care to allow for rapid cooling of exertional heat illness once identified.

Crisis Management Plan

The University of Maryland Athletic Department's Catastrophic Incident Guideline meets established National Best Practices Guidelines in the following areas:

1. An incident(s) that can be classified as a critical incident is defined.
2. A critical incident management team has been established. The following are listed as members of the University of Maryland Athletics Critical Incident Management Team:
    a. Director of Athletics
    b. Assistant Athletic Director for Athletic Training and Medical Services
    c. Associate Athletic Director / Director of Sport Performance

d. Head Team Physician

e. Deputy Director of Athletics / Chief Operating Officer

f. University General Counsel

g. University Counseling Center Director

h. Additional personnel deemed appropriate by Critical Incident Management Team

3. An immediate action plan has been established in the event of a catastrophic incident.
4. A chain of command as well as action plans for the Critical Incident Management Team is documented in the guideline.
5. The guideline includes action items in the event that the Critical Incident is considered a criminal offense.
6. The guideline includes action items in the event that the Critical Incident occurs during team travel.
7. A written summary chronicle for the Critical Incident is included in the guidelines.

The event that occurred on May 29, 2018 is considered a catastrophic event per the University of Maryland Athletics Critical Incident Guideline. The following items did not occur per the University of Maryland Athletics Critical Incident Guideline:

1. Timely documentation of the event did not occur (meeting conducted on June 11, 2018). There were five certified athletic trainers on the field during the incident. Individual accounts of the events were requested and provided upon request. During the meeting with the Assistant Athletic Director for Athletic Training (New Orleans), it was commented that the Head Football Athletic Trainer generally enters all injuries into the injury management program.

2. Immediate communication with the Critical Incident Management Team did not occur. However, it should be noted that the Head Team Physician was notified at 5:52pm. The Associate Athletic Director / Director of Sports Performance and the Sport Administrator were contacted by the Director for Athletic Training and Medical Services "once things settled down in the Emergency Room."
3. There is no documentation available to determine when the following members of the Critical Incident Management Team were notified:
    a. Deputy Director of Athletics / Chief Operating Officer
    b. University General Counsel
    c. University Counseling Center Director
4. There is no documentation available to determine when the following University officials were notified as stated in the guidelines:
    a. President of the University
    b. NCAA Faculty Athletics Representative
    c. University Legal Counsel
    d. USU Risk Management
    e. Vice President for Student Services
    f. Parent Resource Center
5. A detailed written summary chronicle was not prepared following the catastrophic event as the Guideline requires. There is evidence of written documentation of the actual student-athlete event prepared by each member of the Athletic Training staff that were part of providing care to the student athlete.

The policy as presented meets expectations and is well written. The policy as written was not followed post-event.

Hydration Screening

1. There is no evidence of a written hydration screening procedure in the Sports Medicine staff manual.
2. There is no evidence of a written hydration screening procedure in the Strength and Conditioning staff manual. Practices were reported as follows:
   a. Green: 1.00 - 1.019 equates to cleared to practice; continue hydrating.
   b. Yellow: 1.020 - 1.029 equates to monitor at practice; modifications as needed; continue hydrating.
   c. Red: > 1.030 equates to practice modifications; at the discretion of sports medicine staff, hold from practice; continue hydrating.
4. Strength and Conditioning and Athletic Training staffs comment during on-campus interviews that hydration testing is conducted prior to in-season football practices.
5. Strength and Conditioning and Athletic Training staffs comment during on-campus interviews that hydration testing was not conducted for conditioning activities prior to May 29, 2018.
6. Hydration testing is conducted by the Strength and Conditioning staff for football.

This is a concern as non-credentialed persons are conducting testing with significant impact (urine specific gravity) in the absence of training standards. The National Wrestling Coaches Association requires completion of webinar training of qualified credentialed healthcare professionals (nutritionist, physician, certified athletic trainer, etc.). The current level of hydration

for collegiate wrestlers is specific gravity of 1.02, a well hydrated level. Hospital or clinical laboratory report their lowest hydration level as 1.025. The National Wrestling Coaches Association webinar is recognized by the NCAA as a standard for all personnel dealing with body composition and hydration levels of student-athletes.

Hydration testing is an excellent addition to pre- and post-activity weight charts to monitor fluid loss. However, it is recommended any testing by personnel have appropriate training to validate clinical processes.

Specificity - Conditioning Program

The NATA Heat Illness Recommendations (Casa et al., 2015) and Guideline 1A of the NCAA's 2014-15 Sports Medicine Handbook recommends the student-athlete should be protected from premature exposure to the full rigors of sports. Optimal readiness for the first practice and competition is often individualized to the student-athlete rather than a team as a whole. However, there is a lack of scientific evidence to set a specific number of days of sport practice that is needed for the first sport competition (Parsons, 2015). It is also recommended "that student-athletes should participate in at least six to eight weeks of preseason conditioning. Gradual progression of type, frequency, intensity, recovery and duration of training should be the focus of the preparation segment. In addition to these areas warranted for progression, 10 to 14 days are needed for heat acclimatization when applicable (see Guideline 2C)". This recommendation is intended for preseason football practice.

The following information is a summary of the conditioning program that was established by the University of Maryland Strength and Conditioning staff and distributed to the football roster for the month of May.

1. The weeks of May 1 - 28, 2018, were determined to be used as a NCAA discretionary period for the University of Maryland football team.
2. The month of May workout schedule is prepared by the Strength and Conditioning staff and is issued to football team members via email. Text messaging was also utilized by the Strength and Conditioning staff in order to remind the team members to refer to the schedule. The May schedule included basic tips for training, nutrition, sleep, flexibility, and progression in a format that should be easily followed by a collegiate student-athlete.
3. The May schedule included "goals expected to be achieved first week back." Included in the goals is 10 x 110's with subsequent completion times (:19 seconds for offensive linemen), and a 60 second rest period between each repetition.
4. A calendar for the month of May is prepared by the Strength and Conditioning staff and accompanies the schedule that is distributed to members of the football team. The May calendar includes recommended points of emphasis for each day. The 10 x 110's is included on the calendar for the May 29th team run.
5. The team schedule includes recommended daily exercises to be performed along with daily sets and repetitions.
6. A dynamic warm-up plan is included in the materials distributed to football team members. The dynamic warm-up was conducted by the team prior to the 10 x 110 test on May 29th.
7. The team schedule includes recommended daily recommended running workouts.
8. Text messages and emails were sent to the football student-athletes regarding the May Take Home Plan. Each e-mail included the Plan as an attachment.

The Incident

Jordan McNair enrolled at the University of Maryland in the summer of 2017. On his pre-participation physical examination it is noted he has a Vitamin D deficiency and was also on a prescription of Vyvanse capsule (50 mg dose). Vyvanse is a stimulant medication used to treat Attention-Deficit/Hyperactivity Disorder (ADHD). Several intrinsic factors that increase risk for Exertional Heat Stroke (EHS) include medications/supplements (*e.g.,* diuretics, antihistamines, CNS stimulants, antidepressants). While requested, no toxicology results were made available.

Records indicate this was dispensed by the patient's personal physician on a monthly basis. There is general concern among the medical community for student-athletes involved in physical activity while taking stimulant medication, though no precautions are generally listed on the drug information sheets.

In talking with the Head Team Physician, the following statement is generally included with student-athlete education specific to stimulant medication:

The team physician stated *"all of our athlete's that are on stimulant medication for ADHD must meet at least annually to review their medication , assess any side effects and discuss follow up plans with their prescribing physician. All known common and serious adverse reactions are discussed at that time. This is also discussed during follow up visits for those athletes that are prescribed a stimulant medication by a UM sports medicine physician."*

Jordan McNair's initial pre-participation medical examination was conducted April 22, 2017. The Head Team Physician confirmed that student-athletes with specific medications are educated about effects of medications (see italicized statement above), and encouraged to ask questions about the medication. No records were provided of any counseling or patient educa-

tion relative to impact of the drug on exercise tolerance for Jordan McNair. As this was not specifically documented, validation that this occurred is not possible and will be recommended as a step going forward. This recommendation was mutually discussed and supported by the Head Team Physician and consultant.

Student-athletes are weighed daily for all practice sessions. Specific questions were directed to football coaches and strength coaches about Jordan McNair's weight. As a position group, offensive linemen often struggle with their weight. Coaches alluded to discussions about body weight of players during personnel meetings, but none recalled any specific "red alert" for this student's weight. Jordan's weight in June 2017 was 332 pounds, 326 in summer of 2017, 340 in January of 2018, and 334 in the winter of 2018. The spring game was conducted on April 9, 2018, and the following weights are reported following spring practice. Jordan's position coach was asked about Jordan's weight as an issue, and he responded there was no concern. According to both Assistant Athletic Director - Director of Football Performance and the Offensive Line Coach, Jordan McNair was not on an improvement plan for his weight though his coach did comment his target weight for reporting in August was 325 pounds (sixteen pounds below the pre-workout weight of May 29, 2018). All data is presented below in Table 1.

Table 1. Jordan McNair Weights

(taken from Strength_Jordan_Assessments_timepoints_Court)

	April 9 - 14, 2018	April 16 - 20, 2018	April 23 - 27, 2018	April 30 - May 4, 2018	May 29, 2018
M	325	328	326		
T	329	330	326	334	341
W	327		329		

Table 1. Jordan McNair Weights

(taken from Strength_Jordan_Assessments_timepoints_Court)					
	April 9 - 14, 2018	**April 16 - 20, 2018**	**April 23 - 27, 2018**	**April 30 - May 4, 2018**	**May 29, 2018**
T	329	329			
F	327	330	328	332	

Table 1 includes Jordan McNair's weight for the weeks prior to the incident. The team had their discretionary time off from May 4 to May 29, 2018. According to the NCAA, student-athletes enrolled in summer school, or who meet certain academic requirements, may engage in required weight training, conditioning, and review of practice and game film for up to eight weeks during the summer vacation period. These weeks do not have to be consecutive, and activity during this period is limited to a maximum of eight hours per week with no more than two hours per week spent on film review. Countable coaches may be present and involved with any required weight lifting, conditioning, and/or film review.

The strength and conditioning staff sent reminders to the team during the time away reminding them of the need to continue conditioning and also the parameters of the test to be administered upon their return to campus May 29, 2018. Jordan did gain weight during his time off, and reached his highest weight of the spring, 341 pounds (a 5% gain in body weight in the last thirty days).

The conditioning session was initially scheduled for the Maryland Stadium but was moved due to construction. The second option was the Cole Field House, but this was changed due to the poor availability of field space. Thus the decision was made to move to the practice

fields. The staff was now pressed to get the field setup due to the last minute change in venue. Although change of venue is not uncommon in outdoor sports, it is essential that sufficient time must be allowed to ensure minimal medical equipment is setup by the athletic training staff prior to practice initiating

The Head Football Athletic Trainer had identified three new student-athletes and [redacted] student-athletes as concerns for the workout. He closely monitored their activity.

The team conditioning session was scheduled for 4:15 pm on May 29, 2018. Hydration stations were established around the field to allow copious access to fluids. The following time-line was established from multiple data points.

At 12:43:57 pm on May 29, Jordan McNair accessed the locker room as was identified on the digital key pad.

There were five certified athletic trainers positioned on the turf practice field. The Head Football Athletic Trainer and two Assistant Athletic Trainers were positioned along the end zone adjacent to the Team Field House (see figure). There were two students to assist with hydration of players. The Assistant Athletic Director for Athletic Training, an Assistant Athletic Trainer, and three students were positioned along the end zone adjacent to the grass fields.

From the street view (disk 1 of 3), the practice field can be seen. Only the even repetitions are visible from the street camera used to create the timeline. At 16:09:00, the football players starting to gather on the practice field. At 16:13:00 the players begin their workout. It is noted at 16:24:00 that the team flexibility and dynamic warmup activities are engaged. At 16:38:39, players lineup to begin the testing phase of the workout. The team was divided into

three groups of skill athletes, big skill athletes, and linemen. Jordan McNair was part of the third group. Each of the groups ran 10, 110 yard runs. The completion time allotted for the linemen was nineteen seconds. The first group ran their first repetition at 16:40:00. The linemen group ran their first repetition at 16:41:00. It was reported by strength coaches that Jordan McNair completed his first seven runs within his allotted time. Prior to the eighth repetition (16:53:00), he was reported by the Athletic Trainers as exhausted.

During the run, the Head Football Athletic Trainer noticed athletes that were complaining of fatigue. The team encourages active recovery and avoiding bending over with fatigue, and prevention of blood pooling in legs. Athletes were encouraged to "stand tall" during rest intervals.

At 16:54:25, the linemen complete their eighth repetition. The final repetition by the linemen was at 16:58:45. Teammates saw Jordan McNair effort and went to run with him and encourage him to complete the repetition. At 16:59:38, Jordan McNair is being assisted upper left corner of the video. He was being cared for by the certified athletic trainers on the field who described cooling and hydration of the athlete.

The Assistant Athletic Director for Athletic Training documented the incident in Presagia as follows:

S: fatigue, back pain, back cramps

O: hyperventilation, profuse sweating, back cramps

A: heat cramps, fatigue, hyperventilation. Possible seizure added as an addendum to his first note. (This note references the activity occurring within the Gosset Athletic Training Room.) No other documented differential diagnosis.

The Head Football Athletic Trainer documented the incident in Pressagia as well as written documentation:

S: low back pain and cramping

O: oral hydration, ice packs, ice/cold towels used for cooling

A: no documented assessment

The Assistant Athletic Trainers reported:

1. Jordan did not mention cramps on the field. "I'm just tired."
2. Dizziness.
3. No documented assessment

The second Assistant Athletic Trainer reported from written documentation:

S: c/o low back pain

O: No documented assessment

The third Assistant Athletic Trainer was not involved with the on-the-field care nor the initial athletic training room care that Jordan received. His involvement included the retrieval of

emergency equipment as well as meeting EMS on the top floor of Gosset. No documented assessment was provided by the third Assistant Athletic Trainer.

At the end of the run, one athlete had requested his inhaler and it was obtained by the Head Football Athletic Trainer from the Gator (parked between the fields). The inhaler was kept in the trauma pack on the Gator. The Head Athletic Trainer noticed Jordan McNair being assisted by two Assistant Athletic Trainers. He yelled to them to continue him moving (to continue active recovery). The specific verbiage from the Head Football Athletic Trainer could not be confirmed from interviews. The team was transitioning to drill work on the grass fields, and the Head Football Athletic Trainer began moving that way, in a backward walking to ensure all players were moving toward the grass fields. All players were moving that direction except Jordan McNair, who was still being assisted by the two Assistant Athletic Trainers, and the Assistant Athletic Director for Sports Medicine was approaching. Assistant Athletic Trainers assisting with the care of Jordan McNair were questioned about skin temperature and neither noticed any elevation in skin temperature, and denied any observation of increased skin temperature. The two Assistant Athletic Trainers eventually began to walk Jordan McNair to the position drill area. The Head Football Athletic Trainer continued to move toward the grass fields, and a student informed him of another player feeling dizzy. The Head Football Athletic Trainer addressed the athlete at his group (linebackers). Athletic Trainers notice Jordan was complaining of low back tightness and cramping. The Athletic Trainers described hyperventilation. He was encouraged to slow controlled breathing and walk around the field with active recovery. The athlete was walked toward the shed and was put on a treatment table with his legs elevated. At this time, the Head Football Athletic Trainer noticed the two Athletic Trainers taking Jordan McNair from the

field in the Gator. The Head Football Athletic Trainer called by cell phone to check on the status of the player and upon learning he was improving per the Assistant Athletic Trainer, the Head Football Athletic Trainer stayed with the remaining players on the field. At the end of drills, the player being attended to in the shed was transitioned to another Assistant Athletic Trainer, and the Head Football Athletic Trainer ran down to the Gosset Field House.

At 17:22:12, McNair taken from field via Gator by the Assistant Athletic Director for Athletic Training and an Assistant Athletic Trainer. The time from onset of symptoms to being removed from field was a total of 34 minutes. At 17:25:20, the Gator turns corner to Gosset. The Gosset Training Door Report shows the building being accessed by the Assistant Athletic Director for Athletic Training from the Maryland Stadium field level at 17:26:05.

The Head Football Athletic Trainer entered Gosset via the stadium field level athletic training room door where he saw Jordan McNair being attended by the Assistant Athletic Director for Sports Medicine. Jordan McNair was reported as walking into Gosset. His condition was reported as mostly low back cramps and being uncomfortable. The athlete was placed on the large mat table to attempt supine positioning with legs elevated. The Head Football Athletic Trainer instructed Assistant Athletic Trainers to get cold towels to cool him and help with cramping. Jordan continued to be uncomfortable, and sat up on his own as reported by the Head Football Athletic Trainer. He stood and wanted to walk around to relieve back symptoms. He got up up to walk around, and went back to the back physician office area where he sat on the treatment table. When questioned about skin temperature, the Assistant Athletic Director for Athletic Training denied noticing hot skin.

He sat on the table, and the athletic trainers were providing oral hydration and cooling with ice/cold towels and suddenly demonstrated a drastic mood change. At 17:50:00, Jordan McNair had mental status change, began yelling at the Atheltic Trainers.

The Head Football Athletic Trainer noticed this and instructed the Assistant Athletic Director for Athletic Training to call EMS. The Assistant Athletic Director for Athletic Training telephoned the team physician at 17:52:00, instead of calling 911. The Team Physician instructed the Assistant Athletic Director for Athletic Training to call 911, which was done at 17:55:00. There was a subsequent seizure coupled with difficulty breathing due to airway obstruction (mucous described as a brown foamy sputum). He was positioned in a side recovery position. The Head Football Athletic Trainer used manual suction from trauma bag due to airway compromise. The athletes jaw was clenched and he was having convulsive movements as described by Head Football Athletic Trainer. Oxygen was administered.

The Head Football Athletic Trainer was questioned about why the decision to not utilize the cold whirlpool to cool Jordan McNair following the change in status and seizure activity. He answered due to the concern of size of the student-athlete and the smaller stature of the athletic trainers providing care, there was fear of drowning. Cooling was attempted with cold towels and ice packs to the groin and axilla.

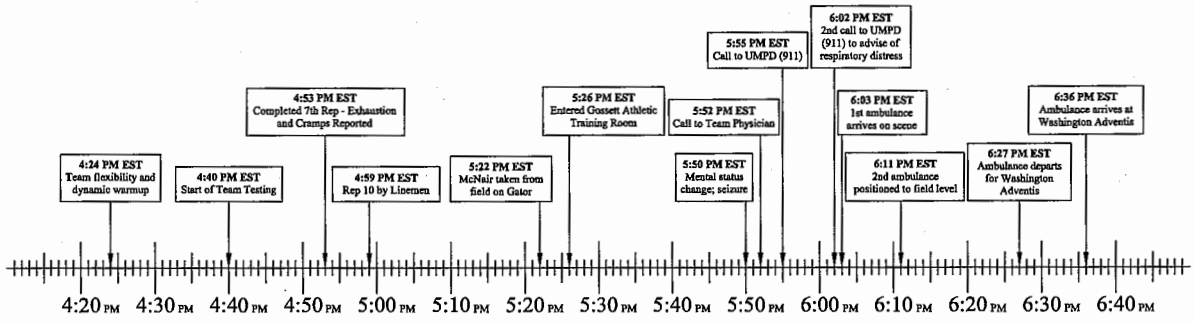
At 18:02:00, the Head Football Athletic Trainer called to campus security and alerted of respiratory distress, to make sure Advance Cardiac Life Support (ACLS) personnel were dispatched - and confirmed EMS had been dispatched. At 18:06:00 the dispatcher initiates priority response since patient seizing. The Head Football Athletic Trainer asked the Assistant Athletic Director for Sports Medicine if someone had been sent to meet EMS. As no one had, the Head

Football Athletic Trainer went to the alley adjacent to the Gosset Team House (field level) to direct EMS, but did not hear or see them at that point. Two student managers were instructed to walk up the alley toward the field house drive and flag down EMS. The Head Football Athletic Trainer returned to the patient to see the first ambulance inside, as they had accessed the building from the main entrance on the first floor and taken the elevator to the ground floor.

Video and audio calls indicate the first ambulance and University of Maryland Police Officer Walker arrived on-scene at 18:03:33.They accessed the building from the ground floor of Gosset and took elevator to the athletic training room. Jordan McNair is loaded onto the first ambulance stretcher and moved outdoors. Athletic Trainers are continuing to attempt to cool with ice packs to the groin and axilla. The Head Football Athletic Trainer confirmed the hospital for transport and confirmed the need to continue cooling efforts. The paramedic confirmed the need for cooling, and informed the Head Football Athletic Trainer Washington Adventis had the "Bear Hugger" for cooling.

At 18:10:57, the ACLS ambulance arrives on-scene front of Gosset. At 18:11:44, the ambulance drives from front Gosset around back to field level. The Head Football Athletic Trainer secured ice and water in an office garbage can and took to ambulance for continued cooling. The patient is transferred from the gurney of ambulance 1 to the gurney of ambulance 2. Once in the ACLS ambulance, paramedics work to secure an IV line, while the Head Football Athletic Trainer and Assistant Athletic Director for Athletic Training continue to assist to cool patient. At 18:27:03, the ambulance leaves from field level and arrives at Washington Adventis at 18:36:00. The following figure includes data from the timeline established by Walters from various data points. The source of the data is included in Appendix A.

Figure 2



The following findings are based on the above mentioned timeline:

- the time from onset of cramps to being removed from field was 34m 12s;
- the time treated in athletic training room prior to change in stature was 23m 55s;
- the time from 911 call to ambulance arriving at the parking lot in front of Gosset Team House was 8m 33s;
- the time from the 911 call to departing the stadium was 37m 3s;
- the onset of symptoms to the call to 911 was 1h 7m; and
- the time from onset of symptoms following the seventh repetition to departure in the ambulance enroute to Washington Adventis was 1h 39m 3s.

- The Associate Athletic Director for Sports Performance was notified the evening of May 29 of the incident.

Specific Comments Regarding Incident

The failure to rapidly recognize exertional heat illness is a concern. The lack of recognition and assessment of the severity of the event delayed cooling the patient in a timely manner. Even if the symptoms were not identified on the field, if core temperature had been assessed with the change in mental status at 17:50 pm, there might have been the opportunity to reverse the patient's core temperature. Without knowing the time the temperature became elevated, it is not possible to say when the condition manifested as exertional heat stroke. The treatment of exertion heat illness involves rapid recognition, rapid assessment, rapid cooling and rapid advanced care within 30 minutes of the onset of symptoms.

Likewise, the change in practice venue on May 29, 2018 from the Maryland Stadium to Cole Field House to eventually the practice fields is another contributing factor. Due to the last minute change, the Athletic Training Staff had to rush to get hydration products and other emergency equipment to the synthetic turf practice fields. Though it is reported cold water immersion tanks are generally included as part of the field setup, they were not on May 29, 2018. Items included within the EAP must be adhered to daily. Deviation from the EAP creates problems.

The issues related to construction within the Cole Field House added challenges to care. The traffic changes, reporting of ambulance to the upper parking lot versus the field level, loss of access to the Gosset Team House; all added to the confusion. The failure to immediately send someone to meet the ambulance (as is identified within the EAP) is a failure to follow an established plan.

In review of the incident of May 29, 2018, the Head Football Athletic Trainer noted barriers involved in care provided to Jordan McNair. First, there was a short notice for the change of venue for the scheduled conditioning run. The complacency of the perceived workout intensity and expected athlete cardiovascular status (level of conditioning) were inaccurate. There was also an assumption of the mildness of the weather that day and the subsequent mild stress response. The calls to 911 (both the initial call at 17:56 by the Assistant Athletic Director for Athletic Training and the followup call at 18:03 by the Head Football Athletic Trainer) were made from the Head Football Athletic Trainer office phone which is across from the physician's examination room. Upon the calls, staff was not sent to escort EMS to the facility upon arrival. Staff was adequate but limited inside the Gosset athletic training room during the event due to the distance to the practice field. There was also a delay due to campus and Cole Field House construction. The Assistant Athletic Director for Facilities kept the Athletic Training staff abreast of construction limitations. There were instructions on restrictions to access the back door (from the Athletic Training Room to Maryland Stadium Field level) and this further delayed staff and student returning to the athletic training room post-workout.

Interviews

Student-athlete Interviews

Student athletes were given the opportunity to register for time slots to meet with the interview team to address any questions or concerns relative to the incident. The Assistant Athletic Director for Equipment shared the announcement with student-athletes, and encouraged signup.

A total of four student-athletes signed up for meetings with the review team on August 1, 2018. A compilation of notes from the meetings are summarized in Appendix B.

No names were recorded to provide anonymity. The concerns expressed were very similar in three of four interviewed stating "how hot and humid it was" and general concern for how this event happened.

Coaches Interviews

Football staff coaches were interviewed individually to ascertain observations from the field on May 29, 2018. A compilation of notes from the meetings are summarized in Appendix C.

University of Maryland Police Officers/Safety Officers

The University of Maryland Police Officers were questioned to validate the climate of activity, coordination of events associated with the EAP, and how construction information is provided to the Athletic Department. The Police Officers arrived on-site at about the same time as the first ambulance as was presented in the timeline (Appendix A). The officers are very involved with stadium safety and weather conditions but not necessarily with specific EAPs at the specific venues. There was a debriefing session between the liaison from University of Maryland Police Department and the athletics department representatives (Assistant Athletic Director for Athletic Training and the Head Football Athletic Trainer). This is an essential step in ensuring appropriate modifications are made to increase interdepartmental communication.

It was reported that the nature of campus construction is a challenge and the University of Maryland Police Department disseminates information to project managers and specific departments relative to road closures, building access, and building initiatives. This information must

be forwarded to the grass-roots level and especially the game managers and administrators and team lead athletic trainers to incorporate data into the EAP. It is imperative that a representative of the emergency team be sent to meet EMS and direct the team to the location of the incident and that appropriate location is communicated to relevance personnel at the time of ambulance initiation.

Independent Strength Coaches and Certified Athletic Trainers

Interviews were conducted with representative Power 5 certified athletic trainers and strength coaches to gauge the workout plans (weight training) and the specific testing performed by University of Maryland football student-athletes on May 29, 2018. Based upon the information provided, further exploration on best practices and industry standards for comparable institutions was conducted.

Additional Noteworthy Comments

There were two additional interviews that were conducted. One was from a parent expressing concern over the pressure her child had endured during time with the football team. Due to the nature of the interview (not heat related illness related), the information was taken and passed along to University General Counsel to pass along to the second commission being established to review the football program in general. The second interview was from an athletic training student expressing concern for the handling of a couple of student-athlete injuries and the intervention between the Head Football Athletic Trainer and the student.

Incidental Review

Concussion Management

The University of Maryland Athletics Department Sports Medicine department's Concussion Policy and Management Plan meet NCAA best practices for Concussion training Diagnosis and Management. The following criteria items are included:

1. Annual student-athlete education about the signs and symptoms of concussion.
2. A student-athlete who exhibits signs, symptoms or behaviors consistent with a concussion will be removed from athletics activities and evaluated by a medical staff member with experience in the evaluation and management of concussion.
3. A student-athlete diagnosed with a concussion will be removed from athletic activity for at least the remainder of that calendar day.
4. Take home instructions for a student-athlete with signs and symptoms of a concussion.
5. Medical clearance for a student-athlete diagnosed with a concussion to return to athletics activity will be determined by a physician or the physician's designee.
6. Procedures are in place for pre-participation baseline testing of each student-athlete.
7. Inclusion of post concussion assessment materials.
8. A progressive plan for return to athletic competition.
9. Coordination of a return to learn management plan.
10. Appropriate documentation of concussion education provided to athletic trainers, medical staff, coaches, and athletic administrators.

The policy as presented meets expectations. This policy did not impact care to the patient on May 29, 2018.

Sickle Cell Trait Screening

The University of Maryland Sports Medicine Department's Policy and Procedure manual contains the following information regarding sickle cell trait. The information reviewed is consistent with current best practices.

1. An introduction to sickle cell trait where the condition is defined.
2. Signs and symptoms of sickle cell trait as well as differential diagnosis for the condition.
3. Emergency management of sickle cell crisis or event.
4. The NCAA information fact sheet regarding sickle cell trait.
5. According to the Sports Medicine Student-Athlete Care and Treatment Guidelines, student-athletes are required to receive sickle cell education and acknowledgement.
6. A student-athlete acknowledgement form where sickle cell trait is defined and signs and symptoms are listed. The acknowledgement form must be signed by the student-athlete, the examining physician, and the athletic trainer.
7. A sickle cell trait Educational Acknowledgment form that states that the student-athlete has "read and fully understands the aforementioned facts about sickle cell trait." This document also states that the student-athlete has "received a Sickle Cell Education Packet from the Sports Medicine office."

While the components of best practice are included, the concerns with sickle cell policy are as follows:

1. The policy and procedure manual does not include the contents of the Sickle Cell Education Packet that is listed in the Educational Acknowledgment form.

2. How are strength and conditioning coaches and sport coaches (head and assistants) notified as to which student-athletes (if any) are sickle cell trait positive?
3. What written documentation are coaches given in regards to sickle cell trait positive student-athletes?
4. What education are strength and conditioning and sport coaches given on sickle cell trait?
5. What education is provided to Sports Medicine staff regarding sickle cell trait and when is this education provided?

The policy as presented meets expectations. This policy did not impact care to the patient on May 29, 2018.

Lightning Monitoring

The current athletic department lightning monitoring is based on WeatherOps and the detection radar system based out of Maryland Stadium. While this works well for activities within the Maryland Stadium, it is not venue specific for non-football stadium activities including but not limited to football practice fields, softball, lacrosse, field hockey, baseball and soccer. Lightning monitoring is also followed by the University of Maryland Police Department specific to game and event management. The University of Maryland Police Department utilize a 16 mile radius for announcing weather and mandate evacuation of outdoor sport venues when lightning is within a 10 mile radius. Lighting monitoring currently utilizes the radar at the Maryland Stadium, and needs to upgraded to allow for venue specific lighting measurements.

The policy as presented fails to meet expectation, and it is recommended the incorporation of venue specific lightning monitoring plans. This policy did not impact care to the patient on May 29, 2018.

Cardiac Screening

The University of Maryland Sports Medicine Policy and Procedure manual does not contain a specific cardiac screening policy. However the following best practice measures for Cardiovascular Care of Collegiate Athletes are in place:

1. Student-athlete medical history form does include a comprehensive personal and family history of cardiac events / disease.
2. Cardiovascular screening is included as part of the Pre-Participation Physical Exam which is conducted by a Team Physician.
3. Non-invasive cardiac screening (e.g., Electrocardiogram and Echocardiogram) are not conducted as part of the pre-participation physical exam.
4. The Sports Medicine Policy and Procedure manual does contain written procedures for Electrocardiograms that are prescribed by the Team Physician.
5. The Sports Medicine Policy and Procedure manual does contain written procedures for Echocardiograms that are prescribed by the Team Physician.
6. The University of Maryland Athletic Department has developed an EAP that can be implemented in the event of a cardiac emergency.
7. The University of Maryland EAP does include the location(s) of Automated External Defibrillators.

The policy as presented meets expectations. This policy did not impact care to the patient on May 29, 2018.

Monitoring of Turf Temperature

The University of Maryland forwarded Walters Inc. a request from the DC Safe Healthy Playing Fields group regarding turf temperature monitoring. The volunteer group seeks to raise awareness of the problems with artificial turf including environmental concerns and protect the safety and the finances of our local communities relative to use of synthetic surfaces. The group is concerned about the health and environmental hazards of synthetic turf, and inquired to Dr. Loh:

"We are a group of activists concerned about the health and environmental hazards of synthetic turf. We would like the commission to please see whether the turf Jordan McNair was playing on was synthetic turf, and if it was, it will be important to check the temperature records of the synthetic field. If no surface temperature records are available, we suggest using a hand-held infrared thermometer to test the field where he was playing under similar weather conditions. We would also like to know if the University of Maryland has a policy in place about playing surface temperatures." This inquiry is included as Appendix D.

At the current time, there was no established best practice for turf monitoring. However, due to the concern of this group, this data was collected for further consideration. There was no monitoring of turf, and the response provided is included as Appendix E. The group requested to collect such data going forward (Appendix F). Based upon their request, team personnel were so requested to monitor surfaces and are monitoring turf temperatures during preseason practices (Appendix G).

Models of Care

The NCAA has been committed to harmonizing practices through policies and guidelines established to support best practices in sports medicine for collegiate athletes. However, enforcement of these practices is dependent on the universities and NCAA auditing is unrealistic in the current climate with the volume of institutions versus resource availability. The development of the role of the "Athletics Health Care Administrator" was to address this specific concern of ensuring compliance with and knowledge of modifications in the ever changing practices of medical care for athletes (http://www.ncaa.org/sport-science-institute/athletics-health-care-administration-best-practices-0). The Athletics Health Care Administrator for the University of Maryland is the Associate Athletic Director for Sports Performance.

It is essential when determining which medical model is most appropriate for an institution, that both independent medical care and autonomy are priorities in the decision-making process. The concept of independent medical care refers to an environment in which primary athletics health care providers, defined as the team physician and athletic training staff, may make medical decisions for student-athletes free of pressure or influence from non-medical factors. This approach empowers team physicians and athletic trainers to have final decision-making authority regarding the diagnosis, management and return-to-play determinations for student-athlete care without influence exerted by non-medical professionals, such as coaches or athletics administrators.

Independent medical care in sports developed from the first Safety in College Football Summit held in January of 2014 to address concussion care and independent medical care in college sports. The groups that participated included the American Academy of Neurology, the

American College of Sports Medicine, the American Association of Neurological Surgeons, the American Medical Society for Sports Medicine, the American Orthopaedic Society for Sports Medicine, the American Osteopathic Academy of Sports Medicine, the Collegiate Athletic Trainers' Society, the Congress of Neurological Surgeons, the NCAA Concussion Task Force, and the Sports Neuropsychology Society. From the summit, organizations formerly established their commitment to principles of independent medical care in the 2014 document, *Inter-association Consensus: Independent Medical Care for College Student-Athletes Guidelines*. The document was reviewed during the Second Safety in College Football Summit (February 2016), and an updated and endorsed inter-association document was published. At the 2016 NCAA convention, the five NCAA Division I conferences with autonomy passed Proposal 2015-15 (independent medical care) reflecting the adoption of the inter-association guidelines.

The foundational approach for independent medical care is to assume an "athlete-centered care" approach, which is similar to the more general "patient-centered care," or delivery of health care services focused on the individual patient's needs and concerns (Courson et al., 2014). The following 10 guiding principles, listed in the Inter-Association Consensus Statement on Best Practices for Sports Medicine Management for Secondary Schools and Colleges provide an example of policies that can be adopted that help to assure independent, objective medical care for college student-athletes. Although it appears that University of Maryland has integrated the principles identified in the consensus statement, it is failure of #3 and #6 and that is of primary concern in the circumstances related to this event. Although this could be considered an atypical presentation of heat-related illness, there was no specific assessment that was completed to rule out concern of this condition knowing the factors surrounding this specific case.

1. The physical and psychosocial welfare of the individual student-athlete should always be the highest priority of the athletic trainer and the team physician.
2. Any program that delivers athletic training services to student-athletes should always have a designated medical director.
3. Sports medicine physicians and athletic trainers should always practice in a manner that integrates the best current research evidence within the preferences and values of each student-athlete.
4. The clinical responsibilities of an athletic trainer should always be performed in a manner that is consistent with the written or verbal instructions of a physician or standing orders and clinical management protocols that have been approved by a program's designated medical director.
5. Decisions that affect the current or future health status of a student-athlete who has an injury or illness should only be made by a properly credentialed health professional (e.g., a physician or an athletic trainer who has a physician's authorization to make the decision).
6. In every case that a physician has granted an athletic trainer the discretion to make decisions relating to an individual student-athlete's injury management or sports participation status, all aspects of the care process and changes in the student-athlete's disposition should be thoroughly documented.
7. Coaches must not be allowed to impose demands that are inconsistent with guidelines and recommendations established by sports medicine and athletic training professional organizations.

8. An athletic trainer's role delineation and employment status should be determined through a formal administrative role for a physician who provides medical direction.

9. An athletic trainer's professional qualifications and performance evaluations must not be primarily judged by administrative personnel who lack health care expertise, particularly in the context of hiring, promotion and termination decisions.

10. Member institutions should adopt an administrative structure for delivery of integrated sports medicine and athletic training services to minimize the potential for any conflicts of interest that could adversely affect the health and well-being of student-athletes.

Independent medical care legislation has been addressed by all three of the NCAA divisions. In Division I Constitution 3.2.4.17 (independent medical care) became effective for the Division I conferences with autonomy on August 1, 2016. In October 2016, all member schools in the 27 non-autonomy Division I conferences opted in to the legislation. At its June 2016 meeting, the Committee on Competitive Safeguards and Medical Aspects of Sports (CSMAS) recommended sponsorship of similar independent medical care legislation to both Divisions II and III and at the 2017 NCAA Convention, independent medical care legislation was passed, effect August 2017, for Divisions II (Constitution 3.3.4.17) and III (Constitution 3.2.4.19). In August 2017, based on the CSMAS recommendations, the sitting Athletic Director proposed transitioning the athletics medical model of care from the athletics department to the University of Maryland Medical School in Baltimore. This proposed model was rejected by the President due to insufficient justification to support the request.

The NCAA Sports Medicine Handbook provides a resource for sports medicine personnel as a compendium of best practices. It is published in conjunction with the Competitive Safe-

guards Committee within the NCAA. The handbook's Guideline 1B provides a charge to athletics and institutional leadership to "create an administrative system where athletics healthcare professionals (team physicians and athletic trainers) are able to make medical decisions with only the best interests of student-athletes at the forefront (Parsons, 2015)." The Ch. 530 Annotated Code of Maryland, Article – Health Occupations SUBTITLE 5D. ATHLETIC TRAINERS describes the following guidelines for licensed athletic trainers in the state of Maryland:

(C) AN EVALUATION AND TREATMENT PROTOCOL SHALL:

(1) DESCRIBE THE QUALIFICATIONS OF THE LICENSED PHYSICIAN AND LICENSED ATHLETIC TRAINER;

(2) DESCRIBE THE SETTINGS WHERE THE ATHLETIC TRAINER MAY PRACTICE;

(3) DESCRIBE THE PHYSICIAN SUPERVISION MECHANISMS THAT THE PHYSICIAN WILL USE TO GIVE DIRECTION TO THE ATHLETIC TRAINER; AND

(4) SPECIFY THE TREATMENT PROCEDURES THE ATHLETIC TRAINER MAY PERFORM (https://www.nata.org/sites/default/files/maryland-act.pdf).

Institutional line of medical authority should be established in the sole interest of student-athlete health and safety. An active member institution should establish an administrative structure that provides independent medical care and affirms the unchallengeable autonomous authority of primary athletics health care providers (team physicians and athletic trainers) to determine medical management and return-to-play decisions related to student-athletes. In addition to an administrative structure that assures such authority of primary athletics health care providers, an active institution should designate a director of medical services to oversee the institution's ath-

letic health care administration and delivery. At the University of Maryland, the Association Athletic Director for Sports Performance oversees the Assistant Athletic Director for Athletic Training who directly supervises the certified athletic training staff.

Though assumed to be mutual, autonomy and independent medical care are not synonymous. Autonomy in healthcare is considered a patient's right to decisions about medical care without their health care provider trying to influence the decision. Patient autonomy does allow for health care providers to educate the patient but does not allow the health care provider to make the decision for the patient. The autonomy of the healthcare team providing services to university student-athletes inherently carries a potential perceived conflict of interest due to the dual responsibility of both providing care while being employees of the university.

The traditional model for providing athletic training services within collegiate athletics has been the athletics model where the athletic trainer is hired by and supervised by an athletic administrator within the athletics department. The primary goal is to establish a functional model for supervising, educating, and appropriately staffing certified athletic trainers and physical therapists to provide high quality care to student-athletes. The plan should integrate concepts of independent medical care in a functional model void of pressure and intervention of coaches and administrators. These concepts should be integrated for all positions related to student-athlete health and welfare.

There are multiple models of care currently available for athletic training services in the collegiate setting. Courson and Goldenberg (Courson et al., 2014) discussed the following models:

Athletic Model (traditional model utilized in collegiate athletics).

1. Athletic trainer employed by athletic department. The team physician is generally a contracted or fee-for-service non-athletic department person.
2. Athletic trainer and team physician employed by athletic department

Academic Model (a version of the athletic model where athletic trainers are employed in education settings and also provide athletic training services clinically).

3. Athletic trainer employed by educational program

Medical Model (The medical model has evolved at several institutions including the University of North Carolina - Chapel Hill in 1973; The Citadel in 1988, and Vanderbilt University in 1990.

4. Athletic trainer and/or team physician employed by university health center or school health services
5. Medical care contracted with outside hospital or private group

Each model offers pros and cons and it is essential that any University takes these into consideration when determining which model is most appropriate to meet the needs of the environment. Academic and medical models are emerging as alternatives to the athletics model, which is the more predominant model in the collegiate athletic training setting (Eason, Mazerolle, & Goodman, 2017). The medical model is proposed to support better alignment for both patient care and the wellbeing of athletic trainers. Whereas the academic model has perceived benefits, role incongruence exists, mostly because of the role complexity associated with balancing teaching, patient-care, and administrative duties.

Irrespective of model, it is imperative the college student-athlete has established medical decision-making independence for appointed primary athletics healthcare providers (Wilkerson, Hainline, Colston, & Denegar, 2014). The primary care sports medicine physician is trained in

the medical conditions including but not limited to cardiac, heat illness, concussion, and other conditions specific to the exercising athlete. The models, while difficult to design to meet the needs of all institutions, do provide structure for providing independent medical care to student-athletes in a void of coaching and administrative influence. Many institutions are not willing to relinquish control of athletic training services to outside entities, while others seek to offload the financial burden. Others may see the value of such a partnership, and seek an alternative model.

Current Athletic Model

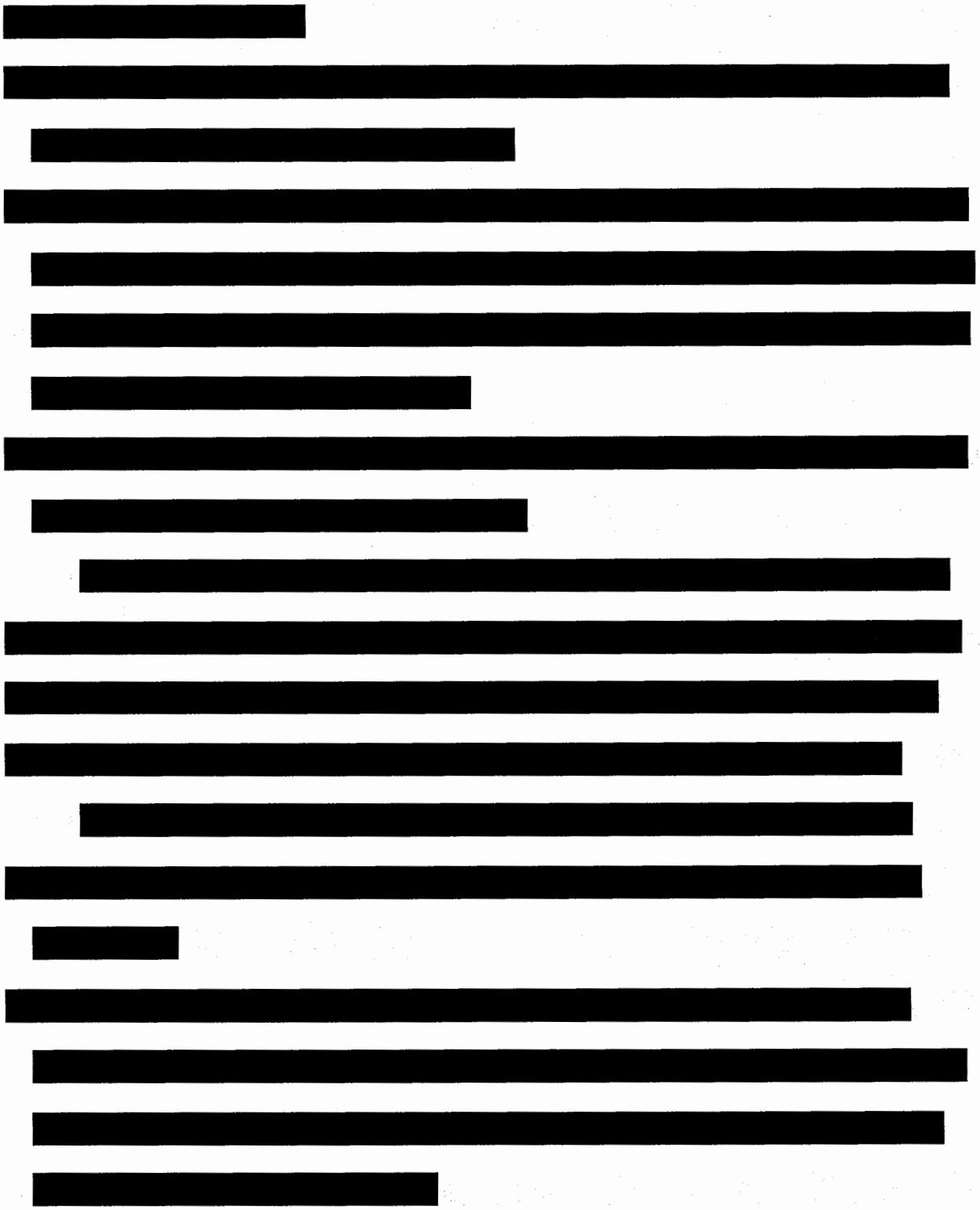
The current model embraced at the University of Maryland Athletic Department is primarily model one, but has aspects of the medical model as the athletic trainers are part of the athletic department but medical supervision is provided by physicians. This model is very prevalent among intercollegiate sports at all levels of participation. The medical model is proposed to support better alignment for both patient care and the wellbeing of athletic trainers.

In an effort to ensure consistency in institutional services provided within the Big 10 Conference, The Big 10 Institutional Control document was drafted in 2016 (see document in Appendix H), and updated in 2017. As outlined in this document, the University of Maryland has a physician-directed health care model that employs licensed athletic trainers providing services to all varsity sport teams and their student-athletes. All physicians who supervise the athletic trainers are employed outside the Athletic Department. The Head Team Physician/Medical Director reports to the UMOA Director of the Program in Sports Medicine, and also has a dotted line reporting relationship to the University of Maryland Associate Athletic Director of Sports Performance. He/ she is responsible to the University of Maryland Medical System in all matters regarding his/ her clinical medical responsibilities. The ultimate authority for hiring University

of Maryland athletic trainers and physical therapists employed by athletics appropriately resides with the Associate Athletics Director for Sports Performance who also provides leadership and administrative oversight for student-athlete health and welfare services. The Assistant Athletics Director for Athletic Training reports to the Associate Athletic Director for Sports Performance. The Head Team Physician serves as the Medical Director and is a faculty member at the University Medical Center and is not an athletics department employee. Coaches do not have direct responsibility for the hiring or supervision of any member of the sports medicine staff, although a coach may be consulted about the performance of the athletic trainer assigned to his or her team. This line of organization meets the recommendation for removing conflict of interest. Only Maryland sports medicine staff members are empowered to manage the treatment of student-athletes and to determine whether an ill or injured student-athlete is ready to return to play, including concussions. Per the EAP, in the absence of sports medicine personnel, coaches with training in first aid, CPR and AED use may initially attend to an injured or ill student-athlete. Sports medicine staff members will report any conflicts or concerns about the implementation of or adherence to institutional policies, procedures, and/or protocols for an ill or injured student-athlete to the Associate Athletic Director for Sports Performance and the Head Team Physician to prevent any attempts to inappropriately influence the medical treatment of a student-athlete.

Proposed Medical Model

[redacted]



[redacted]

Organizational Structure

Organizational charts and job descriptions were reviewed for all positions providing care within this event. The Associate Athletic Director for Sport Performance provides oversight for all athletic training staff and strength and conditioning coaches except for the Assistant Athletic Director - Director of Football Performance. Administratively, there is a lack of efficiency in roles and responsibilities between the Associate Athletic Director for Sports Performance and the Assistant Athletic Director for Athletic Training. This is of concern as it is essential that a successful team include harmonized practices and clear communication within departments in order to be effective and efficient. The Maryland reporting structure follows a traditional athletic training care model where certified athletic trainers directly report to administrators. There are no athletic trainers directly reporting to coaches which is appropriate to decrease conflict of interest. The current strength coach for football (Assistant Athletic Director - Director of Football Performance) does report to the head football coach. Clarity and departmental consistency needs to be established for all organizational charts and job descriptions. The current review revealed

multiple organization charts, many inconsistent with current models within the department. Current charts include a departmental organization chart (ICA Staff Org Chart_August 2018.pdf) (Appendix L) and a chart with the proposed medical model (Appendix M) Clinical Sports Medicine Organizational Chart FY18), though it is not in effect. The primary concern in the current medical model is the lack of clarity for ownership of the positions (athletics) and supervision (medical model) with the UMB. It is not mandatory for athletic training services to be transitioned to UMB. This decision should be based on an evaluation of the health care services provided within the current model.

Associate Athletic Director for Performance Science

The Associate Athletic Director for Performance Science, who is also the designated health care administrator, supervises the following; the Director of Sports Nutrition, the Director of Basketball Performance (Assistant Director of Basketball Performance), the Director of Strength and Conditioning - Olympic Sports (supervises five assistant coaches), the Assistant Athletic Director of Athletic Training (supervising seventeen athletic trainers), the Director of Clinical and Sports Psychology as well as eleven contracted team physicians, two Chiropractors, one medical assistant, and one Physical Therapist (Appendix N). The position is administrative in nature. The person in this position is educated as athletic trainer, but has relinquished their credential. The Associate Athletic Director for Performance Science has a monthly meeting with all direct reports. This structure is appropriately aligned to meet industry standard and the needs of the department.

Assistant Athletic Director for Athletic Training

The Assistant Athletic Director for Athletic Training supervises seventeen certified athletic trainers that provide care to the University of Maryland student-athletes. This position is responsible for the day-to-day organization, administration, and clinical application of comprehensive health care services to over 500 student-athletes. The Assistant Athletic Director for Athletic Training assists with the sports medicine / athletic training operations of all teams, attends practices and events, and maintains daily communication with coaching staffs, strength and conditioning personnel, physicians, and athletic administrators.

This structure is appropriately aligned to meet industry standard and the needs of the department. This position maintains direct oversight of operations within the athletics trainers and coordinates all services provided.

Certified Athletic Trainers

There are currently 17 certified athletic trainers working in the Athletics Department. All 17 are currently certified in an appropriate level of CPR and AED. All Certified Athletic trainers are currently licensed within the state of Maryland as Certified Athletic Trainers. The Head Football Athletic Trainer is dual credentialed as a certified athletic trainer and physical therapist. A complete organization chart is available Appendix O.

All certified athletic trainers are ultimately supervised by the Assistant Athletic Director for Athletic Training who is supervised by the Associate Athletic Director for Sports Performance. This structure is appropriately aligned to meet industry standard and the needs of the department.

Strength and Conditioning Staff

The Assistant Athletic Director - Director of Football Performance directly reports to the head football coach and is not aligned to the Associate Athletic Director for Sports Performance. The Assistant Athletic Director - Director of Football Performance has a staff of four Assistant Strength Coaches and one nutrition position supervised as they work only with football. A complete organization chart for strength and conditioning is available as Appendix P. The Sports Nutritionist for Football is supervised by the Assistant Athletic Director - Director of Football Performance as presented in Appendix P and does not report to the Associate Athletic Director for Sport Performance.

Team Physicians

The Head Team Physician (primary care sports medicine) is housed under the Department of Orthopedics executive director. There is an interim director, Program in Sports Medicine within the Department of Orthopedics supervising the Head Team Physician. The four primary care sports medicine physicians are housed in Family and Community Medicine under the Department of Orthopedics at the University of Maryland (UMB). An organizational chart is presented as Appendix Q (UMB Ortho Sports Medicine Org Chart). This chart presents the current Head Team Physician from the medical school providing contracted services with the University of Maryland Athletics Department. The Team Physicians include primarily patient care though they explained the University of Maryland athletic training procedures are written and compiled by the Assistant Athletic Director for Athletic Training with input from staff. The physicians expressed they were involved with the general medical procedures (diagnostic ultra-

sound, general labs, etc.) and track them in the clinics provided for student-athletes in Athletic Training Rooms though these on-campus procedures are not filed for insurance reimbursement.

New Employee Onboarding

The education of new staff is always a challenge regarding specific procedures, treatment plans, and general orientation to company procedures. It is recommended a plan be developed for all new employee for appropriate integration to departmental specific procedures. It is important that compliance is accomplished and identified by the appropriate oversight manager. This Onboarding process is vital to strength of staff and providing quality care to patients.

Credential Monitoring

Non-Staff Credential Monitoring. There was no evidence of any screening or monitoring of non-university personnel providing care to student-athletes relative to credentials, continuing education or liability/malpractice insurance. While not a major focus of this report, the observation is noted.

Staff Credential Monitoring. All Strength and Conditioning staff were current with professional certification on May 29, 2018. Likewise, all Athletic Trainers had valid state of Maryland licenses within their practice domains on May 29, 2018. All members of both groups had current cardiopulmonary resuscitation on May 29, 2018. Details are presented in Appendix R.

Nutritional Supplements

During interviews with athletic trainers and strength coaches, questions were addressed to determine if nutritional supplements are monitored and regulated by the institution. To the person, it was intimated that nutritional supplements while not prevalent within the program, are truly monitored for nutritional compliance by the nutritionist and the certified athletic trainers. If

nutritional supplements were indicated, they would be purchased by the athletic trainers and/or nutritionists.

Staff Education

The staff education sessions over the past year are presented below in Table 2. No specific meeting notes were provided nor was an attendance list of participants. The Assistant Athletic Director for Athletic Training did describe routine meetings with his staff to address education. Various work groups have been created by the Assistant Athletic Director for Athletic Training for areas such as EAP Workgroup and documentation workgroup. The Assistant Athletic Director for Athletic Training coordinates policies and procedures and refers to this as Team Clinical Management Procedures. There is no verification that team physicians review procedures.

Table 2. Athletic Training Staff Education

Date	Topic
July 9, 2015	Staff Orientation / Staff Training
February 16, 2016	EAP Working Group
March 8, 2016	EAP Working Group
April 7, 2016	EAP Working Group
May 19, 2016	EAP Working Group
June 15, 2016	The Impact of Exercising in the Heat & the Role of Stimulants
August 3, 2016	Staff Orientation / Staff Training
July 27, 2017	Staff Orientation / Staff Training
October 13, 2017	EAP Working Group
October 24, 2017	Suctioning Education; Spleen Injury of a Football Player
November 20, 2017	EAP Working Group

Table 2. Athletic Training Staff Education

December 14, 2017	EAP Working Group
June 18, 2018	EAP Working Group

All training and educational sessions should be coordinated with the Head Team Physician regarding content of training, best practices, and monitoring for compliance. The example of training within the hospital or medical model should be used as a template.

Record Keeping

All football athletic injuries are required to be entered into the Presagia electronic medical record system. It was outside of the scope of this project to validate the compliance of medical record entry for the department. However, it was communicated that the Head Football Athletic Trainer identifies injuries and appropriate information to be entered into Presagia, that are subsequently entered by one of the assistant athletic trainers. A department-wide medical record keeping review and audit was not completed for this report.

The use of an electronic medical record system and entry of all reported injuries is expected to meet industry standard and health care provider legal requirements.

On-Campus Medical Clinics

There are daily clinics at University of Maryland Athletic Training Rooms staffed by the Head Team Physician and Team Physicians (Primary Care Sports Medicine) and also Team Physicians (Orthopaedics). A schedule is planned by the Assistant Athletic Director for Athletic Training and coordinated with the Head Team Physician. The final schedule is shared with all team physicians and athletic trainers via cloud calendars. Clinics are scheduled in both the Gos-

set Team House and Xfinity Center. There are 17 hours of clinics by Primary Care/Sports Medicine physicians; 4 hours of orthopedic clinics; and four hours for chiropractic care.

This amount of physician availability meets standards within Power 5 conferences.

Athletic Medicine Review Board

The Athletic Medicine Review Board is a concept that has been implemented at several institutions to involve best medical practices with oversight from non-institutional professionals from a variety of specialties (cardiology, orthopaedic surgery, neurosurgery, psychiatry, emergency medicine, athletic training, physical therapy, strength and conditioning, nutrition, etc.). It seems prudent to integrate these concepts into the policy development and annual review of procedures of sports medicine.

Observations

1. Lightning monitoring for the University of Maryland non-football sports is based off of the radar at Maryland Stadium though other venues are one to two miles away.
2. Interviews with the Assistant Strength Coaches revealed unfamiliarity with EAPs and AED location specific to the weight room.
3. No AED is located within the weight room, but is accessible in the hall roughly 30 feet from the weight room.
4. No cold water tub was setup for the activity and not utilized though several were located in proximity to the event and athletic training room.
5. The trauma bag utilized for football conditioning run had to be retrieved to the Gosset Athletic Training Room for treatment of Jordan McNair.

6. There was apparent confusion as to where personnel should meet EMS upon their arrival (field level or front parking lot of Gosset Team House).
7. Staff personnel were not sent or directed to meet EMS at the appropriate pre-determined location that is indicated on the Maryland Stadium EAP.
8. Weather monitoring was from a contracted service (WeatherOps) based upon telephone conversation with University of Maryland facilities office. The data is reported as not site specific as the data feed utilizes multiple National Weather Site data points from within the geographical area. A historical record was obtained from https://www.wunderground.com/history/daily/us/md/college-park/KCGS/date/2018-5-29 and reveals the temperature as 81°F at both 5:17 and 5:37 pm. The facility office contact also informed the lighting identification for all University of Maryland feeds is based off the radar detection at Maryland Stadium. The wet bulb globe temperature was not obtained by the Sports Medicine Staff prior to or during the workout.

5:17 PM	81 F	Fair
5:37 PM	81 F	Partly Cloudy

9. Cold water immersion was available in the Gosset Athletic Training Room but it was not utilized.
12. The student-athlete, once symptomatic, admits to staff Athletic Trainers that he did not eat prior to the workout and that he had only eaten a bowl of cereal in the morning.
13. The student-athlete's rectal temperature was not established nor monitored.
14. The student-athlete's vital signs were not established nor monitored. No vital signs were assessed or recorded in any of the records nor the Presaggia incident report.

15. Immediate and aggressive cooling of the student-athlete did not occur. Ice packs and ice towels were utilized.
16. There is no reported record of individual fitness assessment by the strength staff prior to initiation of this test. The test of May 29, 2018 followed a four-week break, though student-athletes were encouraged and reminded to maintain individual workouts over the break. The conditioning session started at 4:15 pm.
17. The conditioning test of May 29, 2018 was the initial day back from a four week off-time. Acclimatization is a concern as this is the initial activity of the summer. The conditioning activity and test was not long in duration.
18. The student-athlete's pre-participation examination was most recently conducted on April 16, 2018. There was a followup consultation with the Head Team Physician on May 7, 2018 with "greater than 50% of this visit was spent on patient education and counseling low vitamin D, sources of vitamin D and recommendations for repletion".
19. All current strength staff are certified by a national accreditation agency as strength coaches.
20. All current strength coaches are currently certified in cardio-pulmonary resuscitation.
21. All current certified athletic trainers are certified in cardio-pulmonary resuscitation.
22. All current certified athletic trainers are licensed within the state of Maryland. One member is dual credentialed and also licensed as a Physical Therapist.
23. [redacted]

[redacted]

24. The Head Team Physician was not actively involved in education and training of staff to invoke best practices in all aspects of the work of athletic trainers utilized for care of UMD student-athletes.

25. All Football Strength Coaches are responsible to the Assistant Athletic Director - Director of Football Performance, and not the Associate Athletic Director for Sports Performance.

26. Hydration testing (urine specific gravity) is being conducted by members of the football strength and conditioning staff; none of which has undergone specific training for urine specific gravity testing. Tests are classified as red, yellow or green. Those in the red area are not allowed to participate in practice until hydration improves.

27. Hydration test results are provided to the Dietician for development of a "hydration recommendation" which is shared with athletic trainers and position coaches, as well as recommendations for hydration being posted on student-athlete lockers. To emphasize hydration, a gallon of water was provided to each student-athlete by the Strength and Conditioning staff to be consumed prior to workouts. After the events of May 29, 2018, Jordan McNair's unopened gallon of water was found in his locker.

28. Information reported to UMD attorney, athletic director, and senior administration two days post event was not representative of activity and care on the field May 29, 2018. Review of videos confirmed UMD administration's concerns.
29. When meeting with the Head Team Physician on August 2, 2018, she did express her concern due to the reported delays that occurred on May 29, 2018 in the care of Jordan McNair.
30. At 16:48 on May 29, 2018, the student-athlete presented with heat cramps and appears to also have heat exhaustion as he was bending over at the waist and was yelled at by the Head Football Athletic Trainer. Though in distress and assistance of two athletic training interns, the student-athlete was walked around the field until 17:22 (34 minutes after becoming symptomatic), he was kept on the field and given fluids.
31. Student-athlete has a prescription for Vyvanse capsule 50 - mg dose.
32. Regarding organizational chart for athletic training, the Associate Athletic Director for Sports Performance has a direct line of communication with the contracted medical staff (physicians, chiropractors, physical therapists).
33. The Associate Athletic Director for Sports Performance supervises the Assistant Athletic Director of Athletic Training.
34. The Assistant Athletic Director of Athletic Training supervises all seventeen of the athletic training staff.
35. The ICA Organizational Chart does not reflect a direct line of supervision from the Team Physician to anyone (Associate Athletic Director for Sports Performance, Assistant Atheltic Director of Athletic Training or athletic training staff).

Recommendations

1. A coverage model should be developed to communicate global departmental understanding of roles and responsibilities of all appropriate personnel relative to the EAP.
2. Organizational charts, job descriptions, and mission statements should reflect roles and expectations for deliverable healthcare services to student-athletes in a model allowing healthcare providers to work in a functional, independent care setting.
3. A venue specific EAP should be developed, practiced, and posted for all sites. Need formalized documentation of training sessions of all staff regarding EAP, the frequency of training including the extent of content.
4. EAPs should be adjusted daily in light of construction. The Office of Facilities communicates with staff regarding impact of construction on facility access.
5. The EAP should be distributed to certified athletic trainers, team physicians, athletic training students, athletic administrators, coaches, institutional safety personnel, and legal counsel. All educational sessions should be documented and repeated according to need, at a minimum of annually. The EAP should be practiced by healthcare team (certified athletic trainers and physicians) at each venue on a quarterly basis, or more often if indicated. All training should be documented.
6. The Gosset Team House EAP appears to be an addendum that is utilized if EMS is to be called. There needs to be a clearly defined EAP for Gosset to include information for emergencies that occur on the first and second floor.
7. A venue specific lightning monitoring plan needs to be established for all outdoor venues.

8. The WBGT (wet bulb globe thermometer) index needs to be implemented for all outdoor venues. Appropriate protocols need to be established for all outdoor venues.
9. Washington Adventist Hospital needs to be added as a potential receiving facility for an injured student-athlete.
10. Cold water immersion devices need to be available for all training, conditioning, or practice activities. Policies and procedures for cooling patients before transport to the hospital must be explicitly stated in an EAP and shared with potential EMS responders so that treatment of EHS by all medical professionals is coordinated .
11. Establish a trauma bag for each practice and game site as part of the EAP. The contents should include thermistors for assessment of core temperature.
12. Develop a plan for assessment of student-athlete with exertional heat illness symptoms including but not limited to core temperature assessment and rapid cooling with cold water immersion.
13. A medical timeout should be initiated prior to every practice and event by the athletic training and physicians.
14. AED locations should be established to guarantee a three-minute response time at all venues.
15. Establish an Athletic Medicine Review Board from a variety of specialties (cardiology, orthopaedic surgery, neurosurgery, psychiatry, emergency medicine, athletic training, physical therapy, strength and conditioning, nutrition, etc.) to provide oversight of sports medicine, strength and conditioning, nutrition etc. This allows oversight for all student-athlete health and welfare issues from a medical perspective.

16. Personnel performing specific gravity screening should be trained consistent with professional standards.
17. There was a lack of timely documentation in the case by those that provided care. Appropriate timely documentation of the event should occur as well as administration of the Crisis Incident Plan.
18. Sufficient time must be allowed for change in practice venue. Practice cannot be conducted until minimal medical equipment is setup by the athletic training staff.
19. Establish a functional model for supervising, education, and staffing certified athletic trainers and physical therapists to allow provision of appropriate medical care in a best practice model. The current model is an athletic model with medical direction. All aspects of this model need to be formalized with consistent directives between job descriptions, understanding of all parties, and organizational charts. These concepts should be integrated for all positions related to student-athlete health and welfare including but not limited to nutrition, strength and conditioning, athletic training, and psychology.
20. Establish a standard procedure for the annual education of student-athletes utilizing any stimulant medication or related medication with potential impact on heat tolerance or other indications for exercise tolerance. This should be appropriately documented in the medical file.

The Head Football Athletic Trainer recommended (post-event) the following items for consideration:

21. All staff to use radios during all practice and conditioning sessions to improve communication.

22. Cold tubs should be prepped regardless of environmental conditions or workout intensity.

23. Hydration testing prior to all team runs .

24. Split groups into smaller groups for team runs.

25. Athlete that does not make their time for their repetition must sit out subsequent repetition. Utilize 1/2 gasser runs (running the width of the field) as this activity emphasizes touching the line and more healthcare team are allowed on return/recovery.

26. Increase communication on timing with change of venue for workout.

27. Physician onsite for conditions tests and/or first day of return from break.

Discussion

The charge from The University of Maryland's Office of General Counsel and Department of Intercollegiate Athletics directed was as follows:

a) perform an independent evaluation of ICA's procedures and protocols related to the recent death of a University football player as detailed more specifically in the "Scope of Services".

b) review the football program's procedures and protocols involving student-athlete health and safety applicable to:

(1) planning and conducting team conditioning and practice sessions and

(2) for responding to health emergencies during or after those sessions.

Based upon the charge, we have conducted over 50 interviews, reviewed 70-plus documents, and engaged in exhaustive hours of research related to the incident of May 29, 2018. There has also been a review of current procedures utilized within the Athletic Training program at the University of Maryland.

The football program's procedures and protocols involving student-athlete health and safety specific to planning and conducting team conditioning and practice sessions meets standards, with concern regarding the following:

1. There was no accommodation for acclimatization (following discretionary activity).
2. There was no assessment of fitness level prior to initiation of conditioning test on May 29, 2018.

There appeared to be a lack of appropriate implementation of the EAP and failure to recognize the severity of the incident. When the severity was identified, inadequate cooling devices were used in place of cold water immersion or cold whirlpools. The prehospital care of exertional heat illness should include rapid recognition of exertional heat stroke to aggressively recognize signs and symptoms associated with this condition. This case was an atypical presentation of exertional heat stroke secondary to running ten 110 yard conditioning runs. Additionally, vital signs including core temperature were not established. When setting up for the conditioning session on May 29, 2018, no cooling apparatus was setup and thus not available for prompt cooling of the patient. In discussions with staff, this is generally part of the field setup, but due to the last minute change of venue for the conditioning activity, no cold tub was prepared.

Health care providers must be responsible for defining acceptable medical risk, based on current standards and best practices. Unlike the professional athletes who have agents to protect their interest, collegiate athletes rely on the university endorsed medical providers to protect their welfare. As we reflect on models for providing care, many Head Football Coaches or Head Basketball Coaches maintain supervisory control over Strength and Conditioning Coaches. Any person with oversight, influence, or impacting personnel caring for the health and welfare of stu-

dent-athletes should be outside the influence of coaches. It seems prudent to provide oversight of all positions dealing with student-athlete health and welfare (athletic training, strength and conditioning, psychology, and nutrition) be supervised directly by a person within the sports medicine domain. They must be compensated accordingly without undue or outside influence. Independent medical care principles must be part of the institution's fabric from the ground floor to the senior administration and leadership of the university. We must understand, models do not direct care. Healthcare professionals direct care.

Exhibits and Appendices

Appendix A: Composite Timeline
Appendix B: Student-athlete Interview Notes
Appendix C: Coach Interview Notes
Appendix D: Letter from DC Safe Healthy Playing Fields to Loh
Appendix E: Walters Response to Turf Monitoring Question
Appendix F: DC Safe Healthy Playing fields Requesting Temp Monitoring
Appendix G: Request to Collect Turf Heat Data
Appendix H: Big Ten Institutional Control 2017
Appendix I: Letter to Dr. Wallace Loh from Kevin Anderson (5/19/17)
Appendix J: Q & A relative to transition of Athletic Trainers
Appendix K: Michelle Eastman response (8/29/17)
Appendix L: Current Organization Chart (ICA Staff Org Chart_August 2018)
Appendix M: Clinical Sports Medicine Org Chart FY18
Appendix N: UMD Sports Performance Org Chart
Appendix O: UMD Athletic Training Org Chart
Appendix P: UMD Strength and Conditioning Org Chart
Appendix Q. UMB Ortho Sports Medicine Org Chart
Appendix R: Credentialing
Exhibit A: Scope of Services

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17.

Appendix A

Date/Time	Description of Activity
5/29 16:24:00	Team flexibility and dynamic warmup
5/29 16:40:00	Team start of testing
5/29 16:41:00	Line run first of ten reps
5/29 16:41:20	Lineman last wave of runners
5/29 16:53:00	Heat Cramps/Heat exhaustion presentation
5/29 16:54:25	Rep #8 by Linemen
5/29 16:58:45	Rep #10 by Linemen
5/29 17:22:12	McNair taken from field via Gator
5/29 17:26:05	Nordwall accessed athletic training room
5/29 17:50:00	Mental status change - subsequent seizure - airway obstruction (mucous)
5/29 17:52:00	Steve Nordwall call to Dr. Cothran
5/29 17:55:00	Caller (Steve) calls into UMPD
5/29 18:02:00	Wes call to campus security - alerted of respiratory distress
5/29 18:03:33	1st ambulance & MPO Walker arrive onscene w/ stretcher
5/29 18:06:00	Dispatcher initiates priority response since patient seizing
5/29 18:10:57	2nd ambulance arrives onscene front of Gossett
5/29 18:11:44	2nd ambulance drives from front Gossett around back to Field
5/29 18:27:03	2nd ambulance leaves from Field
5/29 18:36:00	Arrives at Washington Adventis

Appendix B

Student-Athlete #1

- "Contrary to what is being reported, the athlete collapsed on the field." (Note: this complaint is of concern, due to the nature of this incident, and is taken seriously. This comment was reviewed with all staff on-site during the incident, and no-one reported collapse, though it was corroborated the student-athlete was bent over at the waist, obviously exhausted.)
- Athlete struggled following the seventh repetition.
- Scott and Billy told by Wes to move him. Also reported Wes yelled across the field to "get him the 'fuck' up".
- Concerned that day when this happened as the entire staff was on the field. All athletic trainers, strength and conditioning staff, and football coaches.
- The day felt very humid.
- We engaged in a dynamic warm-up of 15 to 20 minutes.

Student-athlete #2

- It was a humid day.
- Athlete was gassed after seventh repetition. He missed his last three times, and walked much of the way of the tenth repetition.
- West yelled at the interns to drag him across the field. He could barely stand but was "walked" back toward the drills. Two interns were intertwined with his legs trying to hold him up.
- The coaches preach a "no quit" mentality. No one wants to go to the Pit (area of practice for injured players administered by strength coaches). The Pit is no joke, and players avoid this at all costs.

Student-athlete #3

- Athlete struggled with the last reps and he did not make his times in reps nine and ten. Several teammates went to help him finish the last rep.
- It was a very humid day.
- Billy was helping him and Wes yelled drag his ass across the field.
- I walked down the field to the area for position drills and walked by the athletic trainers.
- Team mottos are trim the fat, blind trust. The trust feels face by the strength staff.
- Player trust with athletic training staff is not good. This scenario has obviously influenced how my teammates feel.

Student-athlete #4

- We received reminders over break of the test. This workout did not appear that difficult.
- Jordan looked bigger than usual.

- The weather was not as hot as previous years, we did have an eleven day break due to end of semester.
- We generally do not do a lot of running for conditioning post spring practice.
- My locker is near Jordan's, and he gave the perception that he was not prepared for the test.
- During rep eight, he was bending over at the waist, which is a no-no with coaches.
- During his last rep, he stopped and was walking with arm around teammates.
- During position drills, two players were struggling and athletic trainers were assisting him. There was a linebacker by the water station and Wes was helping him.
- In the locker room, Jordan was in the training room and after I showered, I saw paramedics come in with stretcher.

Appendix C

Assistant Football Coaches

An interview was conducted with Jordan's position coach (August 1, 2018). He was new to the staff being hired in January 2018, and did not have significant contact with Jordan until after recruiting season was over. He was very impressed with Jordan as a student-athlete. His coach did comment it was not excessively hot or humid during the run.

Further interviews were conducted with all position coaches (August 12, 2018) to further get their impression of the weather conditions on May 29, 2018, what they saw on the field that day relative to student-athletes in peril, and any activity that was out of the ordinary for the staff. Coaches were also asked about their familiarity with seizure activity, and was any seizure activity seen by them while watching players condition on May 29, 2018. None of them saw any seizure activity in Jordan McNair.

Assistant Coaches

1. Describe the field conditions on 5/29.
2. Did you see any players in distress during the conditioning run?
3. Was there concern by the staff for Jordan's weight?
4. Do you know what a seizure is?
5. Did you witness a seizure in Jordan McNair on 5/29?

Appendix D

Dear President Loh and Commissioners,

We are a group of activists concerned about the health and environmental hazards of synthetic turf.

We would like the commission to please see whether Jordan McNair was playing on synthetic turf.

If he was, it will be important to check the temperature records of the synthetic field. If no surface temperature records are available, we suggest using a handheld infrared thermometer to test the field where he was playing under similar weather conditions. We would also like to know if the University of Maryland has a policy in place about playing surface temperatures.

The following letter was recently sent to DC officials about our concerns. We address the issue of heat, and in the linked policy recommendations, suggest following Brigham Young University's policy of not playing on synthetic turf over 120 degrees Fahrenheit. http://www.center4research.org/letter-to-dc-officials-about-artificial-turf-and-playgrounds/

The attached testimony to the DC City Council from a heat expert discusses the dangers of heat and synthetic turf.

In Washington DC this week, synthetic turf temperatures have been in the 155-171 degree Fahrenheit range. We are concerned about a child sustaining a burn, or worse, as a result of these surface temperatures.

Perhaps he had been playing on a grass surface (which is typically cool), but if he had been playing on synthetic turf, not only should the commission be investigating the issue of heat, but should also immediately conduct testing on emissions from the field--analysis of PAHs, SVOCS, VOCs, and material characterization of the materials, including the plastic blades, the padding, the infill, and any adhesives. The heat may have been a factor, but if Mr. McNair was on a synthetic surface, the chemical emissions may also have played a role, and it is essential to thoroughly investigate these factors. If he had been on natural grass, there should be an independent scientific review of all of the chemical treatments on the grass.

We know that your practice synthetic turf fields are made by FieldTurf. If Mr. McNair had indeed been playing on one of these fields, a thorough investigation of all meetings with the company and discussion of heat and chemical emissions concerns raised to the company should be conducted. In addition to the multi-district lawsuits highlighted in this article http://fieldturf.nj.com/, we are aware of hundreds of other fraud lawsuits. It would be essential to know what claims they made about heat and chemical emission safety.

On the Astroturf (a competitor of FieldTurf) website, they claim, "

The fibers absorb and retain heat in a way that natural grass doesn't. It's important to note, however, that turf heat is NOT a player safety issue. Rather, it is a player comfort issue. Research has shown that while the fibers are hot, creating higher temperatures at ground and knee level, surface heat dissipates as it rises to chest and head levels, the areas critical for player safety."
This statement seems unsubstantiated; we are aware of many cases of burns and melted cleats. What proof could they provide that playing on 150-170 degree surfaces is simply a matter of discomfort and not a cause for injury?

https://www.astroturf.com/synthetic-turf-fields-technology/artificial-grass-heat/

If he was indeed on synthetic turf, we can help provide a literature review to help guide the types of testing to conduct, and can also connect you with researchers.

We are heartbroken for the family of Jordan McNair. We hope that your investigation prevents another similar tragedy from occurring again.

We understand that you cannot answer all of these questions in one email, but could you please confirm receipt of this email?

Thank you.

Sincerely,
DC Safe Healthy Playing Fields

Appendix E

From: **Rod** rod@rodwa ters.com
Subject: Mary and turf quest on
Date: August 16, 2018 at 6:21 PM
To: dcsafehea thy@gma .com
Cc: M ke Potera a potera a@umd.edu, Co een Sorem csorem@umd.edu

The nc dent n quest on occurred on synthet c turf at the Un vers ty's pract ce fie ds. There were no recorded temperatures of the turf reported.

Thank you.

Rod Wa ters
Sent from my Pad

Appendix F

From: DC Safe Healthy Playing Fields <dcsafehealthy@gmail.com>
Date: August 17, 2018 at 12:42:30 AM EDT
To: Rod <rod@rodwalters.com>
Cc: Mike Poterala <poterala@umd.edu>, Colleen Sorem <csorem@umd.edu>
Subject: Re: Maryland turf question

Thank you for this response.

It is essential in the investigation of this tragedy that, for the next few weeks, temperatures are taken daily at different times in the day to get a sense of the temperature range that that particular field reaches. By noting the time and sunniness and temperature of each reading that you will take, you will be able to then approximate what the field temperature was on that day. A handheld infrared thermometer can be purchased for about $20 on Amazon.

Please confirm that the commission will be made aware of this issue. The final public report should note on the fact that it was on synthetic turf and that no one had taken a temperature reading that day.

Appendix G

From: **Rod** rod@rodwa ters.com
Subject: Fwd: Mary and turf quest on
Date: August 17, 2018 at 6:03 AM
To: Dav d K ossner k ossner@umd.edu
Cc: M ke Potera a potera a@umd.edu, Co een Sorem csorem@umd.edu

P ease see the nformat on be ow regard ng co ect on of data from fie d temperature. As requested, I w p an to ncorporate the data co ected nto the report.

P ease deve op an mmed ate p an to co ect th s data and forward to me on a week y bas s for nc us on n my report.

Any quest ons, p ease et me know.

Rod Wa ters
Sent from my Pad

Beg n forwarded message:

> **From:** DC Safe Hea thy P ay ng F e ds <dcsafehea thy@gma .com>
> **Date:** August 17, 2018 at 12:42:30 AM EDT
> **To:** Rod <rod@rodwa ters.com>
> **Cc:** M ke Potera a <potera a@umd.edu>, Co een Sorem <csorem@umd.edu>
> **Subject: Re: Maryland turf question**
>
> Thank you for th s response.
>
> It s essent a n the nvest gat on of th s tragedy that, for the next few weeks, temperatures are taken da y at d fferent t mes n the day to get a sense of the temperature range that that part cu ar fie d reaches. By not ng the t me and sunn ness and temperature of each read ng that you w take, you w be ab e to then approx mate what the fie d temperature was on that day. A handhe d nfrared thermometer can be purchased for about $20 on Amazon.
>
> P ease confirm that the comm ss on w be made aware of th s ssue. The fina pub c report shou d note on the fact that t was on synthet c turf and that no one had taken a temperature read ng that day.

Date	8/22	8/22	8/22	8/23	8/23	8/23	8/24
Time of Day	8:30 am	11:54 am	5:00 pm	9:02 am	2:34 pm	4:05 pm	8:30 am
WBGT (°F)	80.1	79.3	80.3	70.8	77.1	70.1	72.0
Heat Index(°F)	87.8	84.5	87.4	71.2	76.6	76.1	77.4
Humidity (%)	60.5	60.0	48.9	58.3	37.5	39.9	55.9
Temperature (°F)	83.8	82.5	86.0	71.0	79.2	77.5	76.3
Wind Speed (mph)	0.0	2.5	5.0	3.7	3.0	1-3	0.0
Turf Temperature (°F)	85.4	101.8	104.9	89.7	116.9	95.5	77.9
Sunny / Cloudy	Sunny	Cloudy Sunny	Sunny	Sunny	Sunny	Sunny	Sunny
Rain in last 30 min	No	No	NO	NO	NO	NO	NO

Date	8/24	8/24	8/24	8/25	8/27	8-27	8/27
Time of Day	12:25 pm	3:30 pm	5:35 pm	11:48am	8:07 am	2:12 pm	6:51
WBGT (°F)	78.5	80.5	70.6	[illegible] 78.3	80.6	91.2	81.5
Heat Index(°F)	85.5	79.7	80.1	80.2	88.0	116.2	98.8
Humidity (%)	30.6	34.6	38.7	45.6	75.5	47.3	59.6
Temperature (°F)	87	85.7	81.9	79.9	81.4	99.0	89.2
Wind Speed (mph)	2.3	5.3	5.0	5.5	0.0	1.2	0.0
Turf Temperature (°F)	142	128.1	91.9	121.6	87.8	149.5	91.5
Sunny / Cloudy	Sunny	Sunny	Cloudy	Sunny	Sunny	Sunny	Cloudy
Rain in last 30 min	NO	No	NO	NO	No	No	No

***WBGT – Place in direct sunlight - Wait 10 minutes before reading.**

Record all variables at same time point.

Appendix H

UNIVERSITY OF MARYLAND

Institutional Standards

October 6, 2016

5. Medical and Athletic Training Services

The University of Maryland sports medicine staff has as its highest priority the health and well- being of Maryland student-athletes.

The University of Maryland has a physician-directed health care model that employs licensed athletic trainers providing services to all varsity sport teams and their student-athletes. All physicians who supervise the athletic trainers are employed outside the Athletic Department. The ultimate authority for hiring those sports medicine staff members who are employed by Athletics resides with the Associate Athletics Director/Director of Sports Performance. The Director of Sports Performance also provides leadership and administrative oversight for student-athlete health and welfare services. The Assistant Athletics Director/Director of Athletic Training Services reports to both the Head Team Physician and the Director of Sports Performance. The Head Team Physician serves as the Medical Director and is a faculty member at the University Medical Center and is not an Athletics Department employee.

Coaches do not have direct responsibility for the hiring or supervision of any member of the sports medicine staff, although a coach may be consulted about the performance of the athletic trainer assigned to his or her team.

Only Maryland sports medicine staff members are empowered to manage the treatment of student-athletes and to determine whether an ill or injured student-athlete is ready to return to play, including concussions. In the absence of sports medicine personnel, coaches with training in first aid, CPR and AED use may initially attend to an injured or ill student-athlete. Sports medicine staff members will report any conflicts or concerns about the implementation of or adherence to institutional policies, procedures, and/or protocols for an ill or injured student- athlete to the Director of Sports Performance and the Head Team Physician to prevent any attempts to inappropriately influence the medical treatment of a student-athlete.

Updated 2017

5. Medical and Athletic Training Services

The physician-directed health care model and oversight plan has not changed. We did have a midyear shift in personnel for the Head Team Physician position appointed by the University Medical Center. This did not disrupt service or care to the student-athletes.

There were no reports of a coach's unwarranted influence in the hiring or supervision of sports medicine staff members.

There were no reports of conflicts or concerns about the implementation of or adherence to institutional policies, procedures, and/or protocols for an ill or injured student-athlete

Appendix I

UNIVERSITY OF MARYLAND
DEPARTMENT OF INTERCOLLEGIATE ATHLETICS
Kevin Anderson
Director of Athletics

XFINITY Center
Terrapin Trail
College Park, MD 20742

301.314.0013 TEL
301.314.7149 FAX
kevina@umd.edu

MEMORANDUM

TO: Dr. Wallace Loh, *President*

FROM: Kevin Anderson, *Director of Athletics*

CC: Michele Eastman, *Assistant President & Chief of Staff*

DATE: May 19, 2017

RE: Athletic Trainer Transition

[redacted]

Appendix J

v.

[redacted]

[redacted]

- [redacted]
- [redacted]
- [redacted]

Appendix K

UNIVERSITY OF MARYLAND

David A Klossner <klossner@umd.edu>

Athletic Trainer Transition Plan

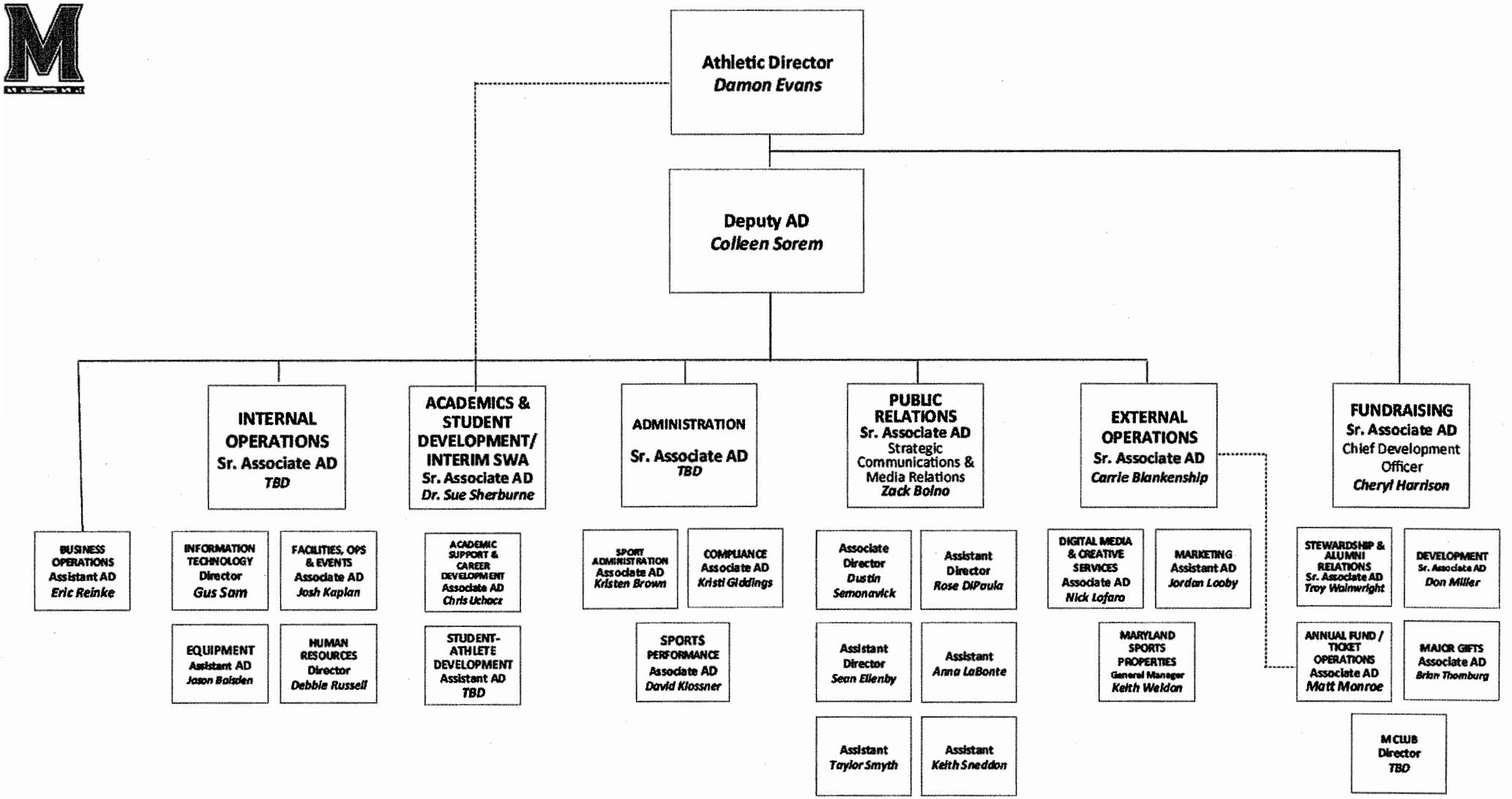
Michele A. Eastman <meastman@umd.edu> Tue, Aug 29, 2017 at 11:23 AM
To: "kevina@umd. edu" <kevina@umd.edu>
Cc: Damon Evans <devans16@umd.edu>, David A Klossner <klossner@umd.edu>

[redacted]

Best,

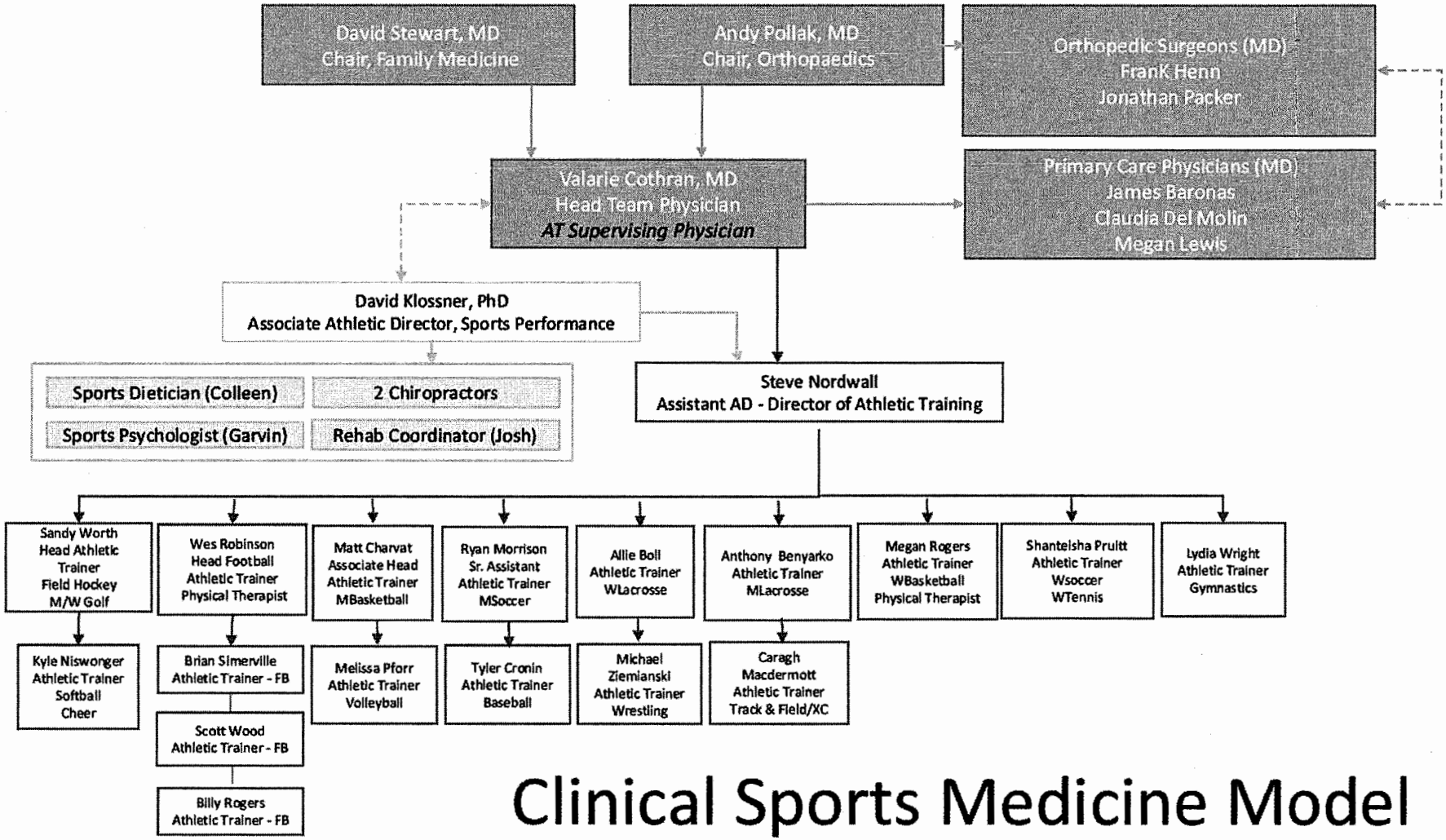
Michele

Michele A. Eastman
Assistant President and Chief of Staff
7901 Regents Drive
University of Maryland
College Park, MD 20742
301-405-6848


Athletic Director
Damon Evans
Deputy AD
Colleen Sorem
BUSINESS OPERATIONS
Assistant AD
Eric Reinke
INTERNAL OPERATIONS
Sr. Associate AD
TBD
INFORMATION TECHNOLOGY
Director
Gus Sam
FACILITIES, OPS & EVENTS
Associate AD
Josh Kaplan
EQUIPMENT
Assistant AD
Jason Boisden
HUMAN RESOURCES
Director
Debbie Russell
ACADEMICS & STUDENT DEVELOPMENT/ INTERIM SWA
Sr. Associate AD
Dr. Sue Sherburne
ACADEMIC SUPPORT & CAREER DEVELOPMENT
Associate AD
Chris Uchacz
STUDENT-ATHLETE DEVELOPMENT
Assistant AD
TBD
ADMINISTRATION
Sr. Associate AD
TBD
SPORT ADMINISTRATION
Associate AD
Kristen Brown
COMPLIANCE
Associate AD
Kristi Giddings
SPORTS PERFORMANCE
Associate AD
David Klossner
PUBLIC RELATIONS
Sr. Associate AD
Strategic Communications & Media Relations
Zack Boino
Associate Director
Dustin Semonavick
Assistant Director
Rose DiPaula
Assistant Director
Sean Ellenby
Assistant
Anna LaBonte
Assistant
Taylor Smyth
Assistant
Keith Sneddon
EXTERNAL OPERATIONS
Sr. Associate AD
Carrie Blankenship
DIGITAL MEDIA & CREATIVE SERVICES
Associate AD
Nick Lofaro
MARKETING
Assistant AD
Jordan Looby
MARYLAND SPORTS PROPERTIES
General Manager
Keith Weldon
FUNDRAISING
Sr. Associate AD
Chief Development Officer
Cheryl Harrison
STEWARDSHIP & ALUMNI RELATIONS
Sr. Associate AD
Troy Walmwright
DEVELOPMENT
Sr. Associate AD
Don Miller
ANNUAL FUND / TICKET OPERATIONS
Associate AD
Matt Monroe
MAJOR GIFTS
Associate AD
Brian Thornburg
M CLUB
Director
TBD

Appendix L

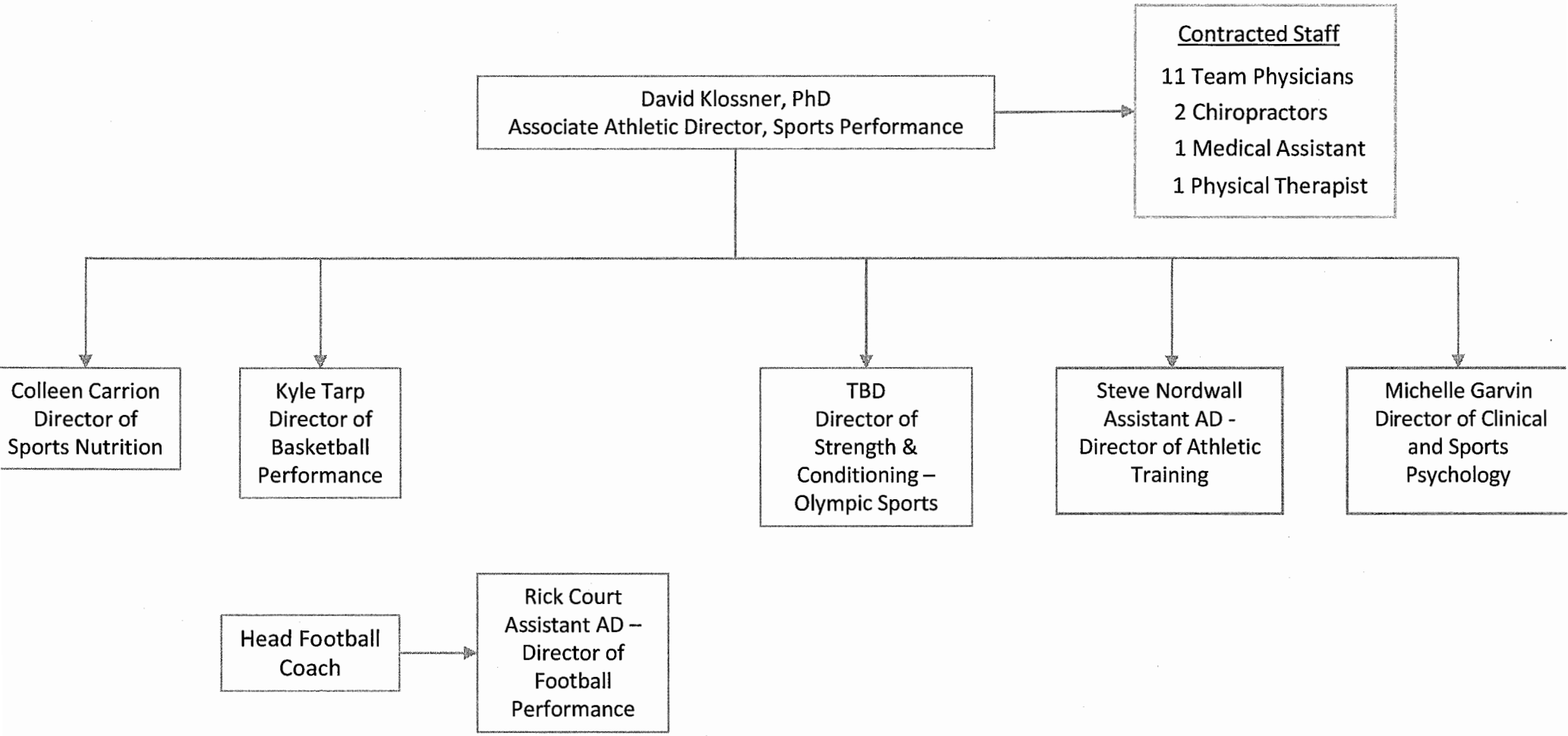
Appendix M



Clinical Sports Medicine Model

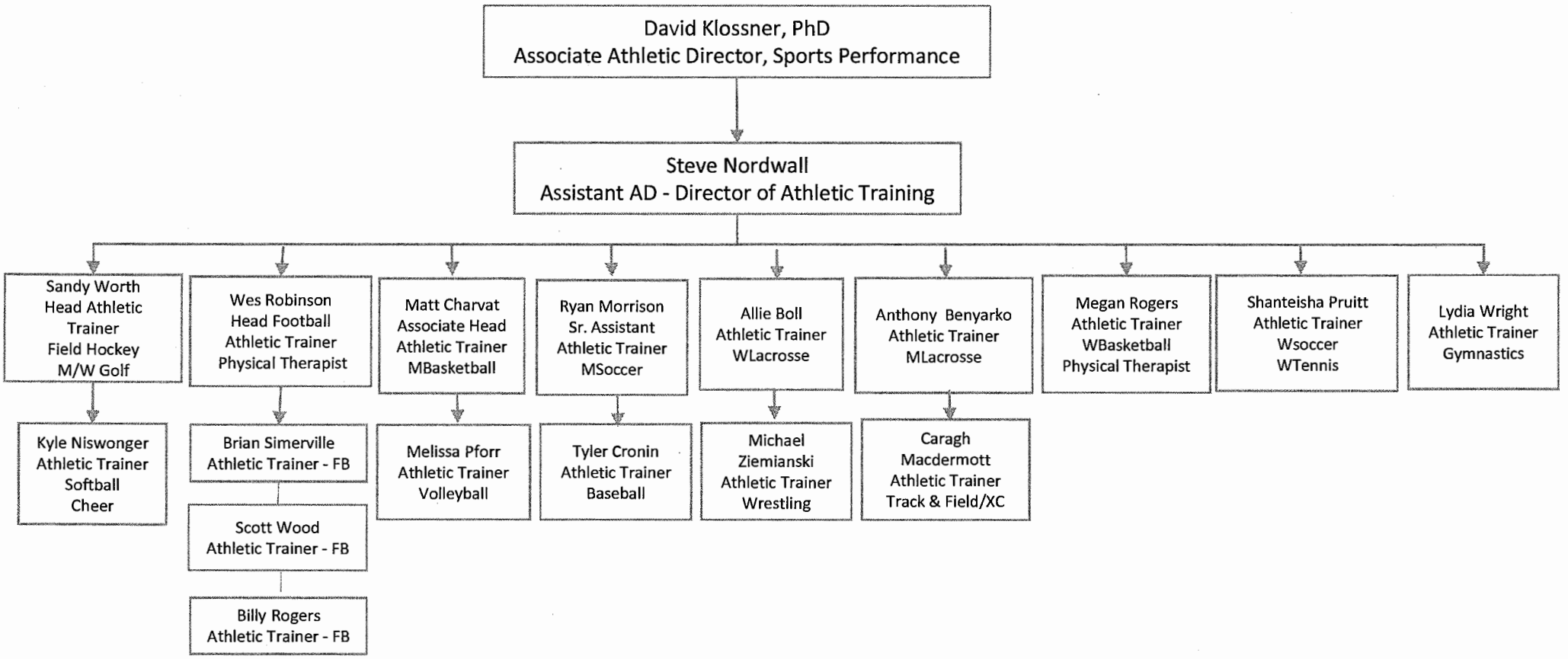
Appendix N

Sports Performance



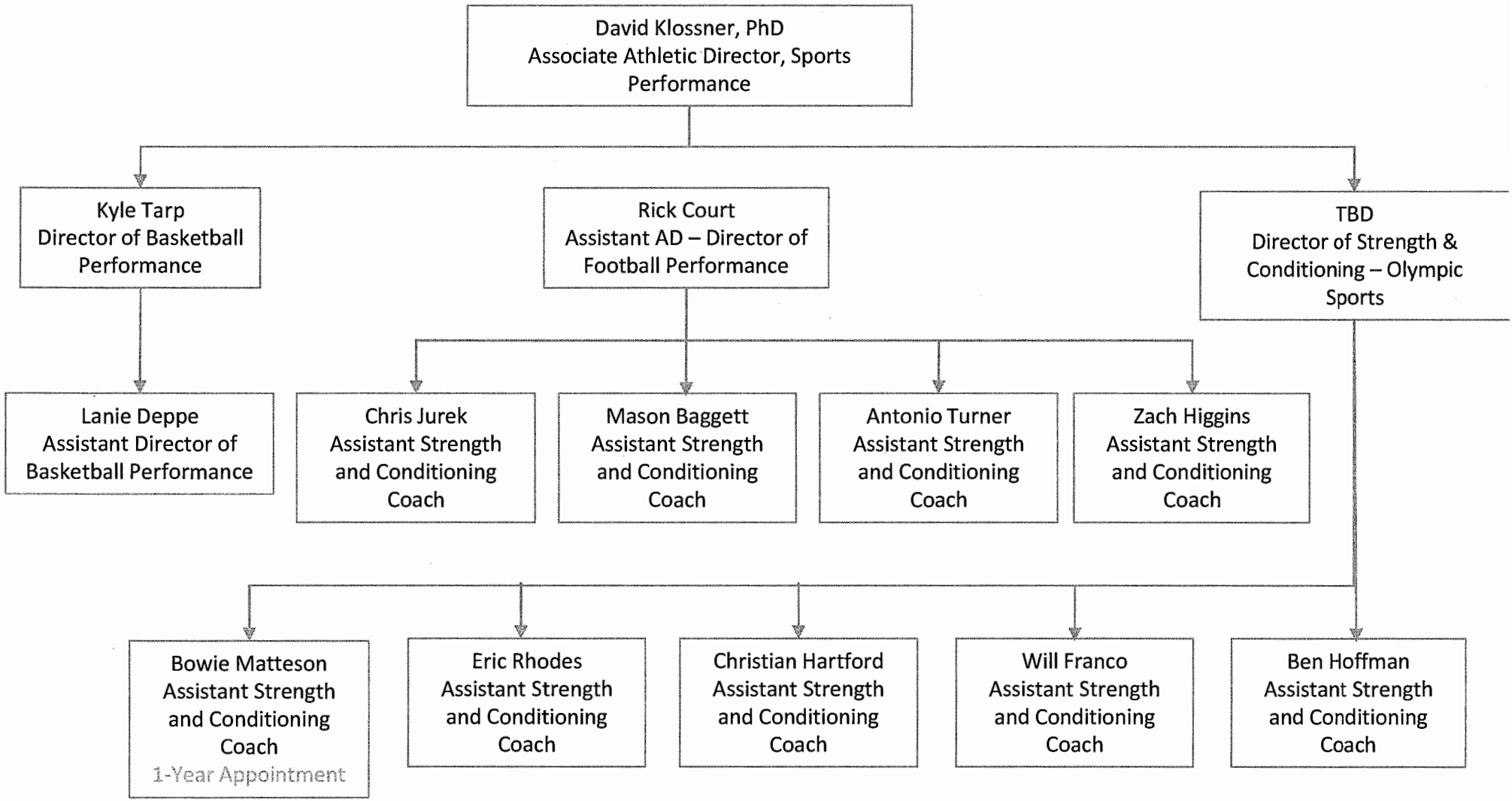
Appendix O

Athletic Training



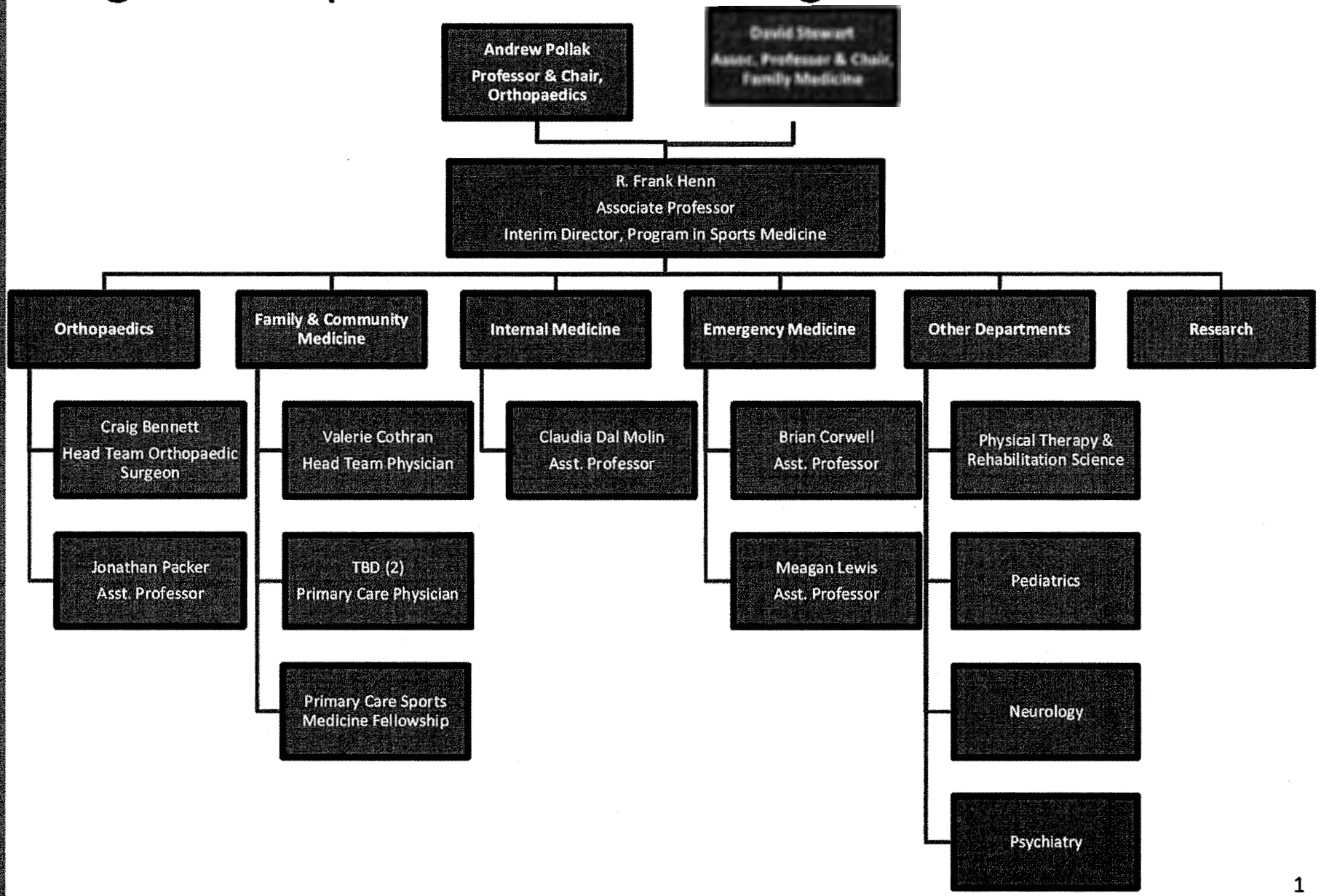
Appendix P

Strength & Conditioning



Appendix Q

Program in Sports Medicine – Organization Chart



Appendix R

Credentialing

The following information regarding credentials of Athletic Training and Strength and Conditioning Staffs have been verified:

Name	Staff	Credential
Steve Nordwall	Athletic Training	State of Maryland Athletic Trainer License
		1st Aid/CPR/AED
Wes Robinson	Athletic Training	State of Maryland Athletic Trainer License
		State of Maryland Physical Therapy License
		1st Aid/CPR/AED
Kyle Niswonger	Athletic Training	State of Maryland Athletic Trainer License
		1st Aid/CPR/AED
Billy Rodgers	Athletic Training	State of Maryland Athletic Trainer License
		1st Aid/CPR/AED
Scott Wood	Athletic Training	State of Maryland Athletic Trainer License
		1st Aid/CPR/AED
Rick Court	Strength & Conditioning	1st Aid/CPR/AED
		SCCC
Mason Baggett	Strength & Conditioning	1st Aid/CPR/AED
		SCCC
		CSCS
		TSAC-F
Zach Higgins	Strength & Conditioning	1st Aid/CPR/AED
		SCCC

		CSCS
Chris Jurek	Strength & Conditioning	1st Aid/CPR/AED
		SCCC
Antonio Turner	Strength & Conditioning	1st Aid/CPR/AED
		SCCC
		CSCS

Exhibit A

Scope of Services
University of Maryland — June 2018
Walters Inc. — Consultant in Sports Medicine

Scope: Walters Inc.- Consultant in Sports Medicine will perform a system review of the delivery of healthcare to the student-athlete at University of Maryland. The review will focus on preparation for competition, competition, and post-competition care that the student-athlete experiences, benchmarked against federal and state laws and industry best-practices. Specific athlete cases will be analyzed as directed by University of Maryland. Walters Inc will deliver a written and oral evaluation of its observations, findings and recommendations.

The review will cover, at a minimum, a detailed analysis of the policies and operating procedures related to in-house services and those provided by external parties. Includes but is not limited to treatment protocols, emergency action plans, weather plans, heat illness, Sickle Cell Trait, psychological disorders, physician access, staffing-coverage in/out of season, supervision, evaluation of staff, credentials, communication tools and protocols for in-season and out-of-season, and evaluation model for screening of student-athletes including initial/interval/post-season assessment

Documentation to be provided by University of Maryland:

1. Job descriptions/contracts
   A. Athletic training staff
   B. Strength and conditioning staff
   C. Physicians consulting with university – non-university employees who are paid fee for professional service
   D. Professional service providers
   E. Copies of current state/national certification of all staff related (to this event?)
2. Copies of agreements with any of the following:
   A. Student health center
   B. Physician groups/practices (anesthesiology, radiology, etc.)
   C. Laboratory facilities
   D. MRI Service
   E. Hospitals and out-patients surgery centers
3. Staffing schedule for medical coverage of all sports and "voluntary workouts"
4. Athletic department manuals, standard operating procedure and all documents pertaining to sports medicine / athletic training.
5. Athletic department manuals, standard operating procedure and all documents pertaining to strength/conditioning.

All documents will be reviewed based on industry best practices and current literature, complete with citations as applicable.

6. Athletic department budget relative to sports medicine/athletic training and strength and conditioning for current and past two years.
7. Training schedule, materials and records of athletic training staff, strength and conditioning staff and coaches related to CPR, first aid and/or AED
8. Campus map identifying location of all athletic facilities and student support services (student health, counseling, etc).
9. Floor plan of facilities used by athletes, including the location of AEDs.
10. All records related to any student-athlete University of Maryland specifies to be included in this review to include athletic-training file including medical history and current medical record, and strength and conditioning files. All records of communication relative to any incidents included in this review.
11. Consultants will visit campus for review of facilities and interview with professionals involved in care of deceased student-athlete including but not limited to athletic trainers, physicians, support staff, strength coaches, and any other professionals involved.

All documents will be reviewed based on industry best practices and current literature, complete with citations as applicable.