Network News

VOLUME 2, ISSUE 2

MAY 2011

THE SECONDARY SCHOOL ATHLETIC TRAINING PRACTICE-BASED RESEARCH NETWORK (SSAT-PBRN)

Director's Update

As we come to the end of this academic year, it is nice to reflect and see how far the PBRN has come in the last 12 months. We now have an established advisory board, a group who we will be engaging in the near future for a couple of initiatives. We have added clinical sites and expanded our membership and have some very dedicated users. Improvements and new features to the EMR have been made, including a concussion module, region specific scale, and patient self-registration. Each of these have been developed from feedback provided by our users. This concept of clinician driven ideas, not only related to the EMR functions, but to the types of clinical research questions the PBRN eventually studies is critical to the success of the PBRN. Our PBRN should work in a bottom-up manner, with our clinicians providing us with ideas and clinical questions about patient care that they want answered. The design of studies to answer these questions can then be vetted among the PRBN scientists and our research partners and study results provided back to the clinician members. We want and welcome feedback and ideas for future studies.

In this issue we are pleased to highlight Dr. Gary Wilkerson, one of our external advisory board members. Dr. Wilkerson is doing some interesting work in the area of clinical practice guidelines. This issue also provides an overview of the EMRs newest features, which we think will be very helpful in improving documentation within the system. I am looking forward to seeing many of you in New Orleans in a few short weeks.

Tamara

In the Literature

The CORE-AT electronic medical record (EMR) recently added a concussion module. Associated with the module is the Headache Impact Test (HIT-6) as a specific outcomes scale to be used with concussed athletes. The HIT-6 consists of six items that cover various content areas reflected in HRQOL: pain, social functioning, role functioning, vitality, cognitive functioning and psychological distress. The HIT-6 provides a broad overview of the impact of headache on HRQOL. Each of the six questions on the HIT-6 is formatted in a Likert style using five response categories: "never", "rarely", "sometimes", "very often" and "always." For each item, 6, 8, 10, 11, or 13 points, respectively, are assigned to the response provided. These points are summed to produce a total HIT-6 score that ranges from 36 to 78. Higher scores indicate a greater impact of headaches on the daily life of a respondent.

Piebes et al (*J Sport Rehabilitation,* 2011;20:129-142) evaluated the reliability of the HIT-6 and the Pediatric Migraine Disability Assessment in adolescent athletes. Following a two-week test-retest interval, both scales demonstrated acceptable internal consistence (HIT-6 α=.89-.90 and PedMIDAS α=.71-.75). The test-retest reliability for the HIT-6 total score was r_s=.72 and reliability of individual items ranged from r_s=.52 to .67. The test-retest reliability for the PedMIDAS total score was r_s=.61 and reliability of individual items ranged from r_s=.23 to .62. These findings support the integration of these two headache-specific outcomes scales into concussion assessment, as may be valuable in determining the extent of HRQOL deficits in athletes experiencing lingering symptoms or post-concussion symptom. Inclusion of these, or similar scales, into baseline testing of adolescent athletes improves clinical practice by providing an opportunity to evaluate the impact of injuries, like concussion, on the individual's overall well being, which is critical for a population that is so easily affected by changes in academic and social environments.

EMR System Upgrades

Thanks to an internal ATSU research grant and research lab funds, the CORE-AT Electronic Medical record has recently undergone upgrading. Three new features, developed based on feedback from our PBRN clinicians, will be released in the late spring or early summer. These new system upgrades include a patient self-registration module, region specific evaluation forms, and a digital file upload and notes feature.

Patient Self-Registration:
Many of our athletic trainers have indicated that one of the major barriers of using the EMR system is registering all of their patients in the system. For ATs with two or three hundred athletes, registration can be significantly time-consuming. Patient self-registration will allow the athlete and their parent to register their information in the system themselves, saving time for the AT. The patient registration site can be accessed through any internet-enabled computer, such as a patient station in the athletic training room or at a patient's home computer. Once the patient submits his registration, the AT simply reviews the information and confirms the creation of an accurate user account.

Region-specific evaluation forms:
Currently, the EMR utilizes a generic evaluation form comprised of drop down menus and text entry boxes to capture patient treatment information. In order to streamline the entry of this data and save clinician time, we developed region-specific evaluation forms. Once the AT completes the initial injury demographic form, the evaluation form will contain body part-specific questions and fields. For example, if the AT indicates that a patient suffered a knee injury, a "knee evaluation" form is automatically compiled to include knee-specific ROM, stress tests, MMT tests, special tests, etc. Many of the text entry fields have been replaced with drop down menus, and should reduce the overall time it takes for completion of forms. Region-specific forms have been developed for the head/neck, shoulder, elbow/wrist/hand, hip/back, knee, and foot/ankle.

Suggestions for future upgrades? We will continue to modify the EMR system based on your feedback. Please contact us at: coreat@atsu.edu

Digital File Upload:
This feature provides the athletic trainer with the ability to upload digital documents associated with a patient's care. For instance, the AT can upload documents referred from other health care professionals treating his/her patient, including: electronic diagnostic imaging, physician notes, and physical therapy progress reports. This tool also allows an AT the flexibility to upload additional patient information which cannot be appropriately included in the other available EMR system forms. For example, the athletic trainer can upload a file documenting contact with a patient's parents regarding medical recommendations for the treatment of an injury.

Notes Feature:
The "notes" feature will be accessed in the same location of the EMR system as the digital file upload. The notes feature was created to allow clinicians to write a simple sentence or two pertaining to the patient's medical care. These notes may consist of comments related to recently uploaded patient files, patient cancelation of an expected treatment session, or dates of future follow-up appointments with physicians.

All current EMR users will receive more detailed information regarding these new features as they are introduced live into the system. We hope that these system upgrades will help to improve your patient care!

Identification of cardiometabolic risk among collegiate football players.

Wilkerson GB, Bullard JT, Bartal DW. J Athl Train. 2010 Jan/Feb;45(1):67-74.

We often rely on a plethora of signs, symptoms, and results of clinical tests to develop differential diagnoses to determine whether a condition is present or absent. *How do we know if we are using the best set of information to make our clinical decision?* Clinical prediction rules undergo a rigorous statistical analysis to determine the fewest and strongest variables that best estimate the probability that a condition, disease, or outcome is present/absent. As such, implementing clinical prediction rules into practice may provide more confidence in one's clinical impression of a patient's condition. A study that developed a clinical prediction rule for metabolic syndrome in collegiate football athletes is summarized below.

Cardiovascular disease commonly affects middle-aged males and is associated with lack of physical activity and poor diet. As such, athletic trainers often screen athletes, particularly collegiate football players, for factors related to cardiovascular disease during pre-participation examinations. One factor often assessed is the presence or absence of metabolic syndrome (synonymous with the term insulin resistance), which is strongly associated with cardiovascular disease. However, a clear definition of signs and symptoms to identify metabolic syndrome does not exist. The authors of this study established the prevalence of metabolic syndrome within a collegiate football cohort and developed a clinical prediction rule to help differentiate those likely to have metabolic syndrome from those who do not. The cohort tested consisted of 63 (62 analyzed for results) NCAA Division I Football athletes (average age 20 years; 55% self-identified as white; 45% self-identified as African American). A series of anthropometric (i.e., height, body mass, body fat %, waist circumference), biometric (i.e., blood pressure, cholesterol, fasting plasma glucose), and quadriceps strength (peak torque to body mass ratio) measurements were obtained from subjects to classify each subject as metabolic syndrome positive or negative. Of those tested, 19% (12 of 62) of football athletes were identified as metabolic syndrome-positive, which is higher than values reported for male college students (1%). The combination of factors found to best predict metabolic syndrome-positive individuals include: 1) waist circumference > 90 cm; 2) blood pressure > 130 mmHG systolic or 85 mmHG diastolic; 3) quadriceps peak torque to body mass ratio > 2.93; and 4) white ethnicity. Using these variables, individuals with 3 or more factors present are 4 times more likely to be metabolic syndrome-positive.

"…implementing clinical prediction rules into practice may provide more confidence in one's clinical impression of a patient's condition."

The clinical prediction rule developed in this study provides a sensitive measure that is more practical and less expensive to the alternative of blood analysis for determining the likelihood of metabolic syndrome-positive and thus, higher risk of cardiovascular disease. Football athletes with 3 or more of the aforementioned factors should be referred for further testing and medical oversight.

Kellie Huxel Bliven, PhD, AT

Secondary School Athletic Training Practice-Based Research Network (SSAT-PBRN)

The mission of the Secondary School Athletic Training PBRN is to improve the quality of care and patient outcomes in adolescent athletes under the care of certified athletic trainers. The PBRN is administered through A.T. Still University and consists of partnerships with Professional (a.k.a., entry-level) an Post-Professional Athletic Training Education Programs as well as hospital groups and clinics, establishing a geographically diverse group of clinical sites.

Advisory Board Member Highlight: Gary Wilkerson, EdD, ATC

Profile

Name: Gary Wilkerson, EdD ATC
Position: Professor, Graduate Athletic Training Program, University of Tennessee, Chattanooga
SSAT-PBRN External Advisory Board Member

Please briefly describe the aims of Clinical Practice Guidelines (CPGs)?

The process of conducting a clinical evaluation and selecting therapeutic interventions for an individual patient can be viewed as a series of hypothesis tests. Each step of this process involves a decision that is either correct or incorrect, which influences decisions made at each successive step. CPGs provide quantitative estimates of the likelihood that an individual patient's clinical presentation is associated with a specific pathologic condition or outcome (i.e., diagnosis, prognosis, or therapeutic benefit). To the extent that an individual patient's clinical presentation matches that of the patient cohort used to develop the CPG, the athletic trainer can make clinical decisions that are based on the odds for correct classification of the patient's future status. Clinical decisions that are based on quantitative likelihoods will almost certainly yield better patient outcomes than those that are based on intuition, dogma, or clinician preference for a particular approach.

How should athletic trainers use CPGs to help guide clinical practice and the clinical decision making process?

Accurate prediction of the outcome that will result from a given course of action is essential for delivery of efficient and effective healthcare services. Although randomized clinical trials provide the highest quality of evidence for the effectiveness of a given clinical procedure, CPGs derived from prospective cohort studies can provide exceptionally valuable information that supports evidence-based practice. CPGs provide clinicians with a means to reduce guesswork in situations that present uncertainty, but they do not necessarily dictate specific responses to clinical scenarios. Typically, CPGs identify 3 to 5 dichotomized factors (i.e., positive [high-risk] or negative [low-risk] classifications) that collectively demonstrate a strong association with a specified diagnosis or adverse outcome (e.g., injury or death). Thus, a CPG can provide an easily interpreted indicator of an individual patient's risk status, which can facilitate the process of making the best clinical decision.

"CPGs provide clinicians with a means to reduce guesswork in situations that present uncertainty…"

What are current CPGs that athletic trainers should know and use in their daily practice?

Athletic trainers should certainly be aware of the Ottawa ankle rules (Stiell et al., 1992), and the Buffalo modification of the rules (Leddy et al., 1998), for guidance of the clinical decision about the necessity to obtain radiographs for a patient who has sustained an ankle injury. The physical therapy literature contains CPGs that relate to realization of optimal therapeutic outcomes; i.e., identification of patients likely to benefit from spinal manipulation (Childs et al., 2003), determination of patients with low back pain who will respond to a stabilization exercise program (Hicks et al., 2005), classification of patients with patellofemoral pain syndrome who respond to patellar taping (Lesher et al., 2006), and lumbopelvic manipulation for the successful treatment of patients with patellofemoral syndrome (Iverson et al., 2008). The only CPG that currently exists in the athletic training literature pertains to the identification of college football players who possess elevated risk for cardiometabolic disease (Wilkerson et al., 2010).

What CPG is your group currently working on?

For the past several years, the faculty, clinical staff, and graduate students at the University of Tennessee at Chattanooga have been engaged in efforts to identify pre-participation tests of physical capabilities, measurements of anthropometric characteristics, and indicators of functional status that are associated with risk for musculoskeletal injury in college athletes. A CPG that quantifies low back and lower extremity injury risk among college football players on the basis of status as a starter, fatigue resistance of the core musculature, and self-reported low back dysfunction is pending publication. Recent work has refined procedures for administration of core endurance tests to improve their predictive value, and has established the predictive value of additional variables (e.g., forefoot to mid-foot width index derived from a footprint, height to body weight relationship, and recent history of stressful life events).

"…the value of a large electronic injury database for injury prevention could be exponentially enhanced through pre-injury documentation of athletes' personal characteristics that represent potentially modifiable injury risk factors."

How can the PBRN infrastructure and CORE-AT EMR system help facilitate the research process related to CPGs?

Electronic injury surveillance is extremely important to establish incidence rates for various types of injuries among athletes who participate in different sports, but the value of a large electronic injury database for injury prevention could be exponentially enhanced through pre-injury documentation of athletes' personal characteristics that represent potentially modifiable injury risk factors. Physical performance tests (e.g., endurance of the core musculature) can identify individual athletes who possess elevated risk for injury, but administration of the tests to a large number of athletes may present a substantial logistical challenge in many settings. Although the predictive power of a CPG is greatest when pre-participation physical test results are included as components, our work has demonstrated that a meaningful level of elevated injury risk can be derived from electronic survey responses (history of specific types of musculoskeletal injuries and self-rating of specific aspects of joint function). Pre-participation scores derived from modified versions of surveys designed to quantify the functional status of the low back (Oswestry Disability Index), knees (International Knee Documentation Committee survey), and ankles/feet (Foot and Ankle Ability Measure – Sports) have yielded reasonably powerful estimates of risk for core or lower extremity strain or sprain in college football players. A major limitation of our work has been lack of a sufficient number of cases of specific injury types in athletes who participate in the same sport. Consequently, our work has been focused on football, which provides a sufficiently large number of participants and a sufficiently high injury rate to generate estimates of relative risk between high-risk and low-risk subgroups of players that have reasonably small 95% confidence intervals. Pre-participation collection of appropriate electronic survey data from an extremely large number of high school athletes could be related to subsequent injury occurrences to develop sport-specific and injury-specific CPGs for future reduction of modifiable risk in an efficient manner. For example, a high school boys' or girls' basketball-specific CPG for prevention of ankle injury might provide a clearly-defined standard for identification of individual athletes who should perform exercises for improvement of neuromuscular control and should be taped or braced. Such a CPG would provide an easily interpreted difference in risk level for high-risk and low-risk player subgroups that could help athletes, parents, coaches, and administrators to understand the importance of compliance with recommendations for risk reduction and the importance of the athletic trainer's role in injury prevention.

National Guideline Clearinghouse (NGC)

What is the NGC?

The National Guideline Clearinghouse™ (NGC) is a publicly available database of evidence-based clinical practice guidelines and related documents. It provides athletic trainers with free online access to guidelines at www.guideline.gov. Updated weekly with new content, the NGC is produced by the Agency for Healthcare Research and Quality (AHRQ, formerly the Agency for Health Care Policy and Research [AHCPR]), in partnership with the American Medical Association (AMA) and the American Association of Health Plans (AAHP) Foundation.

"Clinical practice guidelines are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances. "
- Institute of Medicine (1990)

Key components of the NGC include:

- Structured, standardized abstracts (summaries) about each guideline and its development.
- A utility for comparing attributes of two or more guidelines in a side-by-side comparison.
- Syntheses of guidelines covering similar topics, highlighting areas of similarity and difference.
- Links to full-text guidelines, where available, and/or ordering information for print copies.
- Annotated bibliographies on guideline development methodology, structure, implementation, and evaluation.

Examples of Guidelines Available to Athletic Trainers:

Medical conditions affecting sports participation. 2008 Apr. NGC:006850
American Academy of Pediatrics - Medical Specialty Society.

Appropriateness of physical and sporting activity for those with scoliosis. 2009 Jun. NGC:007429 American Chiropractic Board of Sports Physicians - Professional Association

ACR Appropriateness Criteria® acute shoulder pain. 1995 (revised 2010). NGC:007928
American College of Radiology - Medical Specialty Society.

ACR Appropriateness Criteria® chronic ankle pain. 1998 (revised 2009). NGC:007770
American College of Radiology - Medical Specialty Society.

The diagnosis and treatment of heel pain: a clinical practice guideline - revision 2010. 2001 Sep-Oct (revised 2010 May-Jun). NGC:007853
American College of Foot and Ankle Surgeons - Medical Specialty Society.

Evidence-based care guideline for management of osteochondritis dissecans of the knee in children and young adults ages 5 through 18 years. 2009 Dec 17. NGC:007674
Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Evidence-based care guideline for return to activity after lower extremity injury in children and young adults ages 5 through 22 years. 2010 May 24. NGC:007968
Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

For more information, please visit http://www.guideline.gov/

THE SECONDARY SCHOOL ATHLETIC TRAINING PRACTICE-BASED RESEARCH NETWORK (SSAT-PBRN)

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