Selected Abstracts From the Wilderness Medical Society's 2015 Winter Scientific Conference

Injury and Illness at Resident Summer Camps: An Evaluation for Improvement and Preparedness

Background.—The purpose of this study was to examine the common illnesses and injuries that were sustained at a local resident camp.

Objective.—To identify areas of potential improvement and to make recommendations to increase the quality and preparedness of health services at resident camps.

Methods.—We used an observational study design to retrospectively analyze health center logbooks of a resident camp. The logbooks included every visit to the health center and details about each visit, such as the reason for visit, examination findings, treatment, and disposition. If a patient's injury or illness involved multiple visits or rechecks, the subsequent visits were marked as "recheck," but were given a new study identification number. The study population was from a Boy Scout camp in central Missouri from the summers of 2012 and 2013. Camp staff, youth and adult campers, visitors, and employees were included in the study population if they were seen in the health center. The logbook data were extracted into a digital database and placed into categories based on the reason for the visit, treatments, and dispositions.

Results.—In all, 1586 patients were seen at the health center during the 2-year study; 67.0% were seen for an illness and 18.2% were seen for an injury. For 91.1% of the patients, it was considered safe to return to camp, whereas 7.3% needed transfer to another facility and 0.9% were sent home. The most common reason for transfer was for radiologic imaging (35.7% of all those who were transferred). The most common treatments were oral rehydration, oral medications, and topical creams. It was also found that relationships with emergency medical services and hospitals had room for improvement in the provision of health services.

Conclusions.—We developed recommendations to increase efficiency and health outcomes by improving the available supplies and developing relationships with local emergency medical services and hospitals.

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Winter Wilderness Medicine Race: An Innovative Educational Tool

Background.—We describe 4 years of a winter wilderness medicine race (WWMR) targeted at preclinical medical

students at a large allopathic medical school. The race is designed to integrate preclinical basic sciences with clinical skills in a unique outdoor setting. Specifically, the race aimed to integrate the application of preclinical knowledge, clinical information, teamwork, improvisation, and triage while introducing students to wilderness medicine (WM).

Objective.—We hypothesized that this intervention in medical education would enhance students' WM knowledge, build teamwork and improvisational skills, and increase interest in emergency medicine (EM) and WM specialties.

Methods.—This study is a descriptive, cross-sectional assessment of the medical students participating in a WWMR between 2011 and 2014. Qualitative data were obtained by focus group interviews, and quantitative data were collected by medical knowledge assessments before and after the race.

Results.—Between 2011 and 2014, 122 preclinical medical students from a midwestern allopathic medical school participated in the study. Overall, the mean scores for pre- and post-race knowledge assessments were 48% and 85%, respectively, indicating a 37% increase in scores ($P < .0001$). Participants cited improvisational and communication skills as the most important educational feature of the race. Some students said that the race motivated them to pursue interests in EM, rural medicine, and international medicine. However, no students said that the race had inspired them to focus their careers on WM.

Conclusions.—The WWMR enhanced preclinical medical students' WM knowledge, teamwork skills, and improvisational abilities. Although the event stimulated interest in EM, students did not feel more inclined to choose or pursue WM as a career.

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Survey of Illnesses and Injuries in Offshore Great Lake Sailboat Racing

Background.—Injuries and illnesses during ocean sailboat racing are well studied, but little if anything has been published about such events in the Great Lakes. Sailboat races vary in distance and duration, and take place regardless of weather conditions. Sailboat racing is a relatively safe sport given its

implicit hazards associated with the boat maneuvering and exposure to the elements. Nonetheless, there have been significant tragedies. Recent improvements in safety gear and advances in technology have allowed for more acute medical management of sailors.

Objective.—This study investigates the relative frequency of injuries and illnesses sustained during offshore sailboat racing in the Great Lakes, which has never been reported. These results will be compared with those published in a study that investigated the same occurrences during the Newport Bermuda ocean race to determine whether there is a difference in frequency or type found on the open ocean versus the Great Lakes.

Methods.—The study design was prospective, descriptive, and observational. Surveys were self-reported and collected after the race from the boat representative. De-identified data were entered into a Microsoft Excel database and analyzed by a professional statistician.

Results.—In 2013, representatives of 164 boats responded to the survey in one offshore race, which represented 1260 sailors; 146 illnesses were reported, and 9 boats reported at least 1 injury. In 2014, representatives of 435 boats responded to the survey in two offshore races, which represented 3525 sailors. The 2014 data are still being analyzed.

Conclusions.—The 2013 rate of injury and illnesses in the Great Lakes was significant at 125 per 1000 races per sailor when compared with the Newport Bermuda race at only 12. Injuries in the form of contusions were most common in the Great Lakes races as opposed to lacerations in the ocean races, and seasickness was the most common illness in both environments.

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Paper Tape Prevents Foot Blisters: Randomized Prevention Trial Assessing Paper Tape in Endurance Distances II (Pre-TAPED II)

Background.—Friction foot blisters, a common and potentially disabling injury, have been found to be the most likely factor adversely affecting ultramarathon performance. An inexpensive and effective prevention technique is needed for this ubiquitous outdoor occurrence.

Objective.—To determine whether paper tape could prevent friction foot blisters on blister prone areas of multistage ultramarathoners.

Methods.—This multisite prospective randomized trial was undertaken during the 2014 RacingThePlanet, a 155-mile, 6-stage ultramarathon in the Jordan, Gobi, Madagascar, and Atacama deserts. Paper tape was applied to a randomly selected foot before the race, either to participants' blister prone areas or to a randomly selected spot, with untaped areas of the same

foot as control. Study outcome was a blister anywhere on the study foot.

Results.—In all, 128 participants were enrolled, and 109 (85.2%) were compliant. There were 31 women (22.5%), with a mean age of 39.3 years (range 22 to 63 years) and body mass index (BMI) of 24.2 kg/m² (range 17.4 to 35.1 kg/m²). Intent-to-treat analysis revealed 106 participants (83%) had 117 blisters, with treatment success in 98 runners (77%). Paper tape reduced blisters by 40% ($P < .01$, 95% CI: 28 to 52), and number needed to treat, 1.31. Results were similar in the compliant group (NNT = 1.35). The majority of participants (78%) had 1 blister, most commonly on the toes ($n = 58$, 50%) and heel ($n = 27$, 23%), and 94 blisters (80%) occurred by the end of stage 2 of the race. Treatment success and number of blisters were significantly associated with hours of exposure ($P = .01$) and stage of race ($P = .02$); BMI correlated with number of blisters ($r = 0.23$, $P < .01$, 95% CI: 0.06 to 0.39).

Conclusions.—Paper tape was found to have robust protective effect against foot blisters for multistage ultramarathon runners.

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“Out of the Box” Disaster Training: Low-Cost Training Tools Improve Medical Team Disaster Performance

Background.—The provision of life-saving medical care in austere environments requires rescue team training in a simulated setting. Not every rescue organization has the capability to train in the field owing to weather, limited budgets, or schedule constraints.

Objective.—We developed a competency-based curriculum for patient care providers using an indoor, easily reproducible,