

## [ Primary Care ]

# Issues Encountered by Physicians During International Travel With Youth National Soccer Teams

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**Background:** Little information is available to guide the selection, preparation, and support of a traveling team physician.

**Purpose:** To determine the types of injuries and medical problems, as well as general team health and performance issues, encountered by physicians traveling internationally with youth national soccer teams.

**Study Design:** Descriptive epidemiology.

**Methods:** Physicians assigned to travel abroad with the under-17 men's and women's US national soccer teams during a 2-year period documented all encounters with team and staff members. Physicians also documented consultations related to team health and performance issues.

**Results:** The 108 cases (5.71 per 10 days) were evenly divided between injuries ( $n = 54$ ) and noninjuries ( $n = 54$ ). Players sought care at a higher rate than did staff (2.28 vs 1.09 per 100 person days). Mean severity for all player cases was 5.19 days missed (injuries, 10.48; noninjuries, 0.23). Nearly 69% of injuries involved the lower extremities: strains, sprains, and contusions accounted for 74.1% of injuries. Gastrointestinal, dermatologic, and otolaryngologic complaints accounted for 77.8% of noninjuries. Medications were administered in 71% of cases, with analgesics, cough and cold remedies, antibiotics, and gastrointestinal agents accounting for the majority. The leading team health and performance concerns were nutrition/hydration, conditioning, prevention, and doping control.

**Conclusion:** Physicians traveling internationally with youth soccer teams manage an equal proportion of musculoskeletal and medical problems using simple medications.

**Keywords:** travel, sports, soccer

A skilled physician traveling with a team can help prevent some injuries and illnesses and promptly treat those that do occur. Language barriers and cultural differences can be eliminated, and the team can maintain a desired standard and continuity of care while away. These benefits may translate into team success.<sup>1,10</sup>

The "Team Physician Consensus Statement"<sup>14</sup> provides guidelines for choosing a qualified team physician and outlines the duties expected of this position. A study of all team physician encounters with intercollegiate athletes at a major university over 2 years found that 73% of initial evaluations were musculoskeletal and 27% were general medical problems.<sup>13</sup>

A traveling team physician may play multiple roles, including "a public health advisor, sports psychologist, emergency medical technician, general practitioner, and a musculoskeletal specialist."<sup>3</sup> Studies of the frequency and types of consultations

at the Olympic Games<sup>5,11,12</sup> are of limited relevance to the typical traveling team because of the unique nature and scope of an Olympiad. Multiple studies have looked at injury rates associated with international soccer tournaments.<sup>4,7,8</sup> Only Babwah and Rogers<sup>2</sup> reported noninjury complaints and staff needs with a men's team but included domestic training camps.

Additional information about the health care needs of a traveling sports team is needed to guide organizations in the selection and preparation of team physicians, the development of policies and protocols, and the provision of medical supplies.

## METHODS

This descriptive observational study examined a convenience sample of all international trips by the under-17 men's and women's national teams of the United States Soccer Federation

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Table 1. Traveling youth soccer teams: exposure, physicians, and destinations.

	Men's Team	Women's Team	Total
Trips	11	3	14
Days	136	53	189
Personnel in days			
Players	2936	1064	4000
Staff	1076	480	1556
Playing exposure			
Training sessions (player hours)	80 (2593.5)	34 (939)	114 (3532.5)
Matches (player hours)	44 (726)	14 (231)	58 (957)
Provider specialty in days			
Orthopedic surgery	63	45	108
Primary care	73	8	81
Location in days			
Mexico/Central America/Caribbean	26	16	42
South America	50	0	50
Europe	42	0	42
Africa	18	0	18
Australia/New Zealand	0	37	37

between January 1, 2008, and December 1, 2009. Institutional review board approval was obtained before the start of the study.

Health care providers who were assigned to work any part of a trip were identified and asked for their assistance. The participating professionals were provided either electronic or paper versions of 3 forms for data collection. The Trip Information Form documented physician professional information, trip details, number of training sessions and matches, and general team health and performance issues. For each athlete or staff complaint, an Injury Report Form or a Noninjury Complaint Form was completed.

Consultation rates were calculated both per 10 days and per 100 person days. Injury rate for players only was calculated per 1000 player hours.

## RESULTS

All providers assigned to eligible trips (20 physicians, 2 physician assistants) agreed to assist with data collection. Twenty-two providers covered the 14 team trips. Thirteen practitioners were in orthopaedic surgery and 9 in primary care (6 family medicine, 3 pediatric medicine). Nineteen had completed a sports medicine fellowship; 11 held certification in sports medicine.

The average trip length was 13.5 days (Table 1). Of the 189 total days, 71 were for world championship qualifying or finals competition (42 of 53 women, 29 of 136 men). Of the 58 total matches, 38 were tournament competition (14 of 14 women, 24 of 44 men).

There were 108 consultations for rates of 5.71 per 10 days and 1.94 per 100 person days. The cases were equally divided between injuries and medical complaints (54 each). Female and male players sought care at the same rate (2.44 vs 2.21 per 100 person days).

The mean duration in days missed for all player cases was 5.19 (injuries, 10.48; noninjuries, 0.23). Of the 91 initial player evaluations, 71 did not cause any time loss (30 of 44 injuries, 41 of 47 other complaints). Nearly 69% of injuries involved the lower extremity; 12.9%, the trunk; and 9%, the upper extremity, head, and neck (Figure 1). Three systems—ear/nose/throat, gastrointestinal, and dermatologic—constituted 77.8% of the noninjury complaints.

The number of muscle strains ( $n = 14$ ), sprains ( $n = 13$ ), and contusions ( $n = 13$ ) were similar and accounted for 74.1% of injuries (Figure 2). Half the muscle strains (7 of 14) occurred in staff members. The leading medical complaints were diarrhea and upper respiratory infection (10 and 9 cases, respectively). Of the 10 diarrhea cases, 2 occurred in Mexico/Central America/Caribbean (0.48 per 10 days), 3 in South America

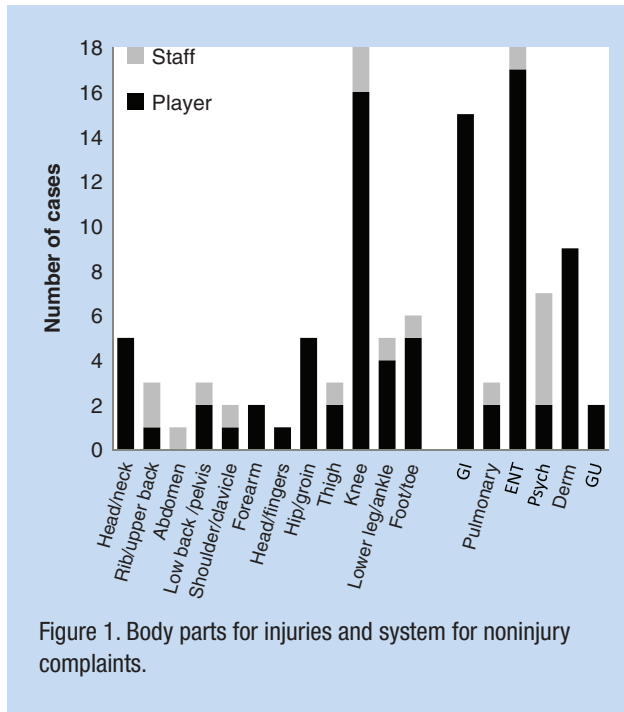


Figure 1. Body parts for injuries and system for noninjury complaints.

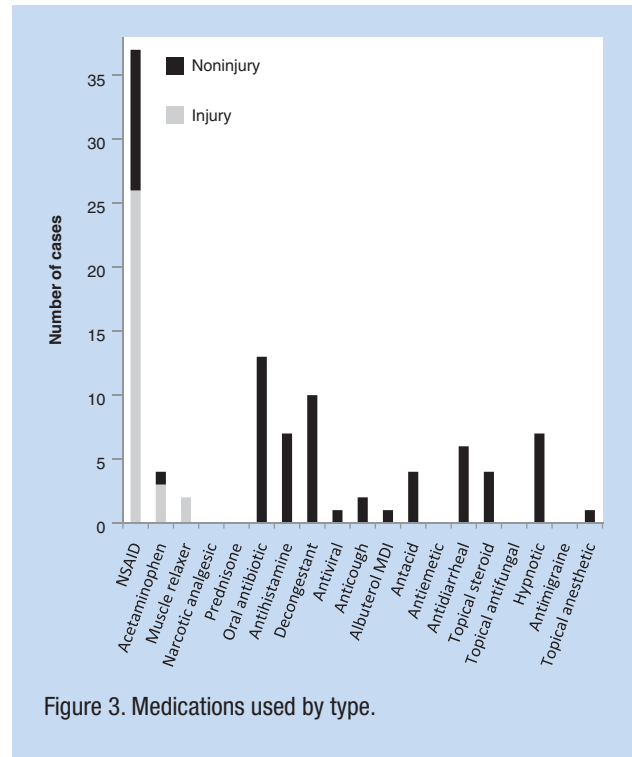


Figure 3. Medications used by type.

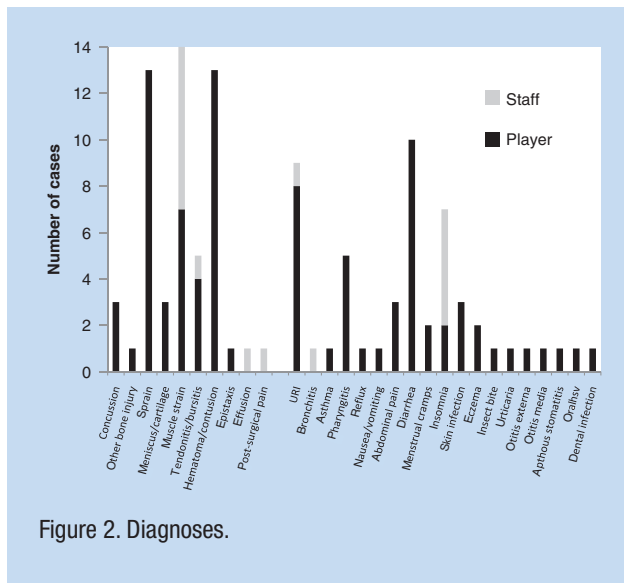


Figure 2. Diagnoses.

(0.60 per 10 days), and 5 in Africa (2.78 per 10 days). Of the 8 total noninjury complaints by staff members, 5 were for insomnia.

Of the 54 injuries, 5 required casting/splinting and 1 arthrocentesis. Of the 54 noninjuries, 1 required intravenous fluid and 1 incision and drainage. A variety of medications were used (Figure 3). Players sought care at a higher rate than staff (2.28 vs 1.09 per 100 person days,  $P < 0.01$ ) (Table 2). Providers were asked about 18 team health and performance issues (Figure 4).

## DISCUSSION

At a rate of 5.71 cases per 10 days, team physicians in this study saw fewer cases than reported by Babwah<sup>2</sup> (24.17 cases per 10 days over 72 days with the Trinidad and Tobago national men's soccer team), most likely explained by the age difference between the teams. The adult professional soccer player is likely under the stress of a congested match/training/travel calendar comprising both club and national team demands. Higher skill level and intensity may also increase injury risk.<sup>8</sup> Older athletes have more time to develop general health conditions or overuse injuries. Adult players may also approach medical providers about health issues more often than teenagers will. Familiarity with one provider may encourage a higher usage rate as well.

There was an even distribution between injuries and noninjury complaints, whereas Babwah<sup>2</sup> reported 67.2% injuries versus 32.8% illnesses. More frequent travel may increase the frequency of noninjury complaints. Exposure to airplane cabin conditions can lead to respiratory complaints.<sup>9</sup> Travel across multiple time zones can lead to insomnia, headaches, fatigue, and gastrointestinal disturbance.

Most injuries were common soft tissue problems and minor in nature: 68.2% (30 of 44) did not cause any loss of playing time. Seventy percent of staff injuries were muscle strains from training. Physicians should ensure that this group is adequately prepared for intense activity, through counseling and proper warm-up. Simple procedure skills, such as cast/splint application and injection, were used to treat 6 of 54 injuries;

Table 2. Comparison of players and staff for injuries, noninjuries, and medication administration.

	Players	Staff	Total
<b>Injury</b>			
Overall (rate) <sup>a</sup>	44 (1.10)	10 (0.60)	54 (1.00)
Per 1000 h	9.58		
Training	17 (0.43)	7 (0.45)	24 (0.43)
Per 1000 h	4.81		
Match	26		26
Per 1000 h	27.17		
Other	1 (0.03)	3 (0.19)	4 (0.07)
Cause (%) <sup>b</sup>			
Overuse	10 (22.7)	8 (80.0)	18 (33.3)
Trauma	34 (77.3)	2 (20.0)	36 (66.7)
Preexisting	13 (29.5)	3 (30.0)	16 (29.6)
<b>Other complaint</b>			
Overall (rate) <sup>a</sup>	47 (0.12)	7 (0.04)	54 (0.10)
Per 1000 h	10.47		
Training	7 (1.18)	0 (0.00)	7 (0.13)
Per 1000 h	1.98		
Match	2		2
Per 1000 h	2.09		
Other	38 (0.95)	7 (0.45)	45 (0.81)
Preexisting (%) <sup>b</sup>	6 (12.8)	0 (0.0)	6 (11.1)
<b>Medication</b>			
Administered	62 (68.1)	15 (88.2)	77 (71.3)
NSAID <sup>c</sup>	28 (30.8)	9 (52.9)	37 (34.3)
Antibiotic	12 (13.2)	1 (5.9)	13 (12.0)

<sup>a</sup>Rate: per 100 person days

<sup>b</sup>Percentage of column for that category.

<sup>c</sup>Nonsteroidal anti-inflammatory drug.

no surgical interventions were required. Team physicians should be well trained in the management of common musculoskeletal problems, including stabilizing an injury for the return trip home.

Team physicians should be comfortable in assessing general medical conditions, such as otolaryngologic, gastrointestinal, and skin complaints. Severity of noninjury complaints was minimal; 12.8% (6 of 47) caused time loss with a maximum absence of 4 days. All 10 cases of diarrhea occurred during visits to Mexico/Central America/Caribbean, South America, or Africa. Travelers from

industrialized countries are most at risk for this ailment when visiting developing tropical areas,<sup>6</sup> and teams should institute precautions accordingly.

More than 20% of all patients in this study had positive histories. Athletic organizations should provide a written medical history for each athlete and staff member in the travel party. Reviewing these records before departure may allow physicians to institute necessary precautions and effectively recognize and treat medical problems.

Medications were used in 71.3% of the cases (77 of 108). Simple analgesics, oral antibiotics, cough and cold remedies,

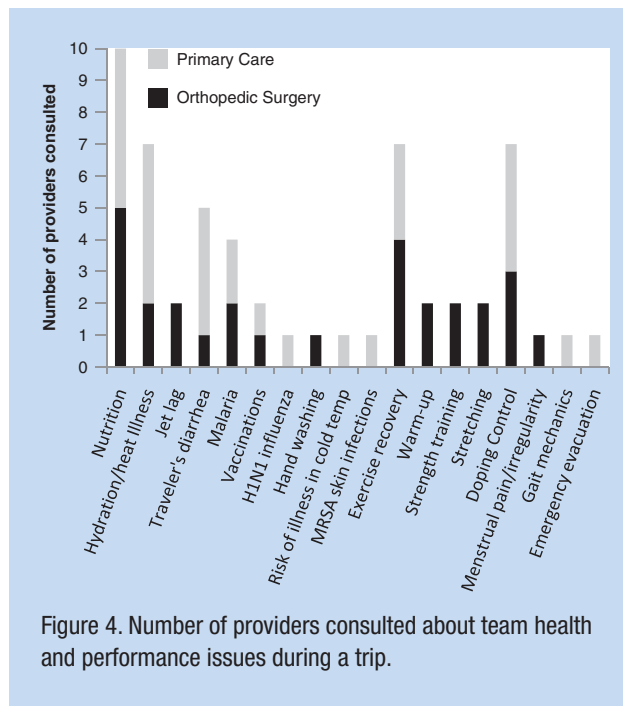


Figure 4. Number of providers consulted about team health and performance issues during a trip.

and gastrointestinal agents should be sufficient for most team needs. Doping control is a common team concern (7 of 22 providers consulted). Athletic organizations can provide an updated list of banned substances and exemption policies within travel medication kits to help ensure compliance.

Providers were asked about 18 issues related to team health and performance. Nearly half the providers were consulted about nutrition, whereas exercise physiology arose 13 times. Such topics may not occur often in regular clinical practice, but teams expect physicians to have expertise in these areas, so they should prepare accordingly.

The study has limitations, including the ability to generalize to other age groups, skill levels, nationalities, and sports. The attitudes and experience levels of the 3 team athletic trainers may have influenced what complaints and issues were referred to physicians. Although the study involved 14 separate trips, the number of cases ( $n = 108$ ) may still be too small to make general assumptions about injury and noninjury complaint patterns during travel. Although unique or severe medical problems were rare in this study, athletic organizations and

physicians should still prepare for extreme medical situations occurring away from home.

In conclusion, the physician traveling internationally with a sports team should be prepared to recognize and treat a variety of common injuries and general medical conditions. A modest supply of medications and equipment allows physicians to manage nearly all complaints until the patient returns home. Players and staff expect the team physician to be an expert on nutrition/hydration, conditioning, injury and illness prevention, and doping control regulations.

## AUTHOR'S NOTE

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## REFERENCES

1. Arnason A, Sigurdsson SB, Gudmundsson A, Holme I, Engebretsen L, Bahr R. Physical fitness, injuries, and team performance in soccer. *Med Sci Sports Exerc.* 2004;36(2):278-285.
2. Babwah TJ, Rogers R. The team physician in football: what skills are important? *Int Sportmed J.* 2008;9(3):108-115.
3. Brown DW. Medical issues associated with international competition: guidelines for the traveling physician. *Clin Sports Med.* 1998;17(4):739-754.
4. Dvorak J, Junge A, Grimm K, Kirkendall D. Medical report from the 2006 FIFA World Cup Germany. *Br J Sports Med.* 2007;41(9):578-581.
5. Eaton SB, Woodfin BA, Askew JL, et al. The Polyclinic at the 1996 Atlanta Olympic Village. *Med J Aust.* 1997;167(11-12):599-602.
6. Gascon J. Epidemiology, etiology and pathophysiology of traveler's diarrhea. *Digestion.* 2006;73(suppl 1):102-108.
7. Junge A, Dvorak J, Graf-Baumann T. Football injuries during the World Cup 2002. *Am J Sports Med.* 2004;32(1)(suppl):23S-27S.
8. Junge A, Dvorak J, Graf-Baumann T, Peterson L. Football injuries during FIFA tournaments and the Olympic Games, 1998-2001: development and implementation of an injury-reporting system. *Am J Sports Med.* 2004;32(1)(suppl):80S-89S.
9. Leder K, Newman D. Respiratory infections during air travel. *Intern Med J.* 2005;35(1):50-55.
10. Orchard JW. On the value of team medical staff: can the "Moneyball" approach be applied to injuries in professional football? *Br J Sports Med.* 2009;43(13):963-965.
11. Reeser JC, Willick S, Elstad M. Medical services provided at the Olympic Village polyclinic during the 2002 Salt Lake City Winter Games. *Wisc Med J.* 2003;102(4):20-25.
12. Robinson D, Milne C. Medicine at the 2000 Sydney Olympic Games: the New Zealand health team. *Br J Sports Med.* 2002;36(3):229.
13. Steiner ME, Quigley DB, Wang F, Balint CR, Boland AL Jr. Team physicians in college athletics. *Am J Sports Med.* 2005;33(10):1545-1551.
14. Team physician consensus statement. *Med Sci Sports Exerc.* 2000;32(4):877-878.