

# Team Physicians in Men's and Women's Professional Sports Leagues

## Gender Representation and Career Path Analysis

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**Background:** The most common orthopaedic fellowship is for sports medicine, but few fellowship-trained orthopaedic surgeons fill roles as team physicians. Gender disparities within the field of orthopaedics, coupled with male-dominated professional sports leagues in the United States, may lead to lower representation of women as professional team physicians.

**Purpose:** To (1) determine the career path trajectories of current head team physicians in professional sports, (2) quantify gender disparities across team physician representation, and (3) further characterize professional profiles of team physicians appointed to women's and men's professional sports leagues in the United States.

**Study Design:** Cross-sectional study.

**Methods:** This is a cross-sectional study of professional sports head team physicians in 8 major American sports leagues: American football (National Football League), baseball (Major League Baseball), basketball (National Basketball Association and Women's National Basketball Association), hockey (National Hockey League and National Women's Hockey League), and soccer (Major League Soccer and National Women's Soccer League). Online searches were used to compile information on gender, specialty, medical school, residency, fellowship, years in practice, clinical practice type, practice setting, and research productivity. Differences according to league type (men's vs women's leagues) were analyzed with the chi-square test for categorical variables, *t* test for continuous variables, and Mann-Whitney *U* test for nonparametric means. Bonferroni correction was applied for multiple comparisons.

**Results:** Within the 172 professional sports teams, 183 head team physicians were identified, including 170 men (92.9%) and 13 women (7.1%). Team physicians in both men's and women's sports leagues were predominantly men. Overall, 96.7% of team physicians in men's leagues were men, and 73.3% of team physicians in women's leagues were men ( $P < .001$ ). The most common physician specialties were orthopaedic surgery (70.0%) and family medicine (19.1%). Compared with team physicians in women's leagues, those in men's leagues were more likely to be orthopaedic surgeons (40.0% vs 71.9%, respectively;  $P = .001$ ) and to have more experience (15.9 vs 22.4 years, respectively;  $P < .001$ ).

**Conclusion:** Study findings indicated disparities in gender, practice experience, and physician specialty representation among team physicians in men's versus women's professional sports leagues.

**Keywords:** professional sports; team physicians; disparities; gender; career; training

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Orthopaedic sports medicine fellowship continues to see the highest number of applicants each year (28.3%) versus other subspecialties, with an average of 92.9 accredited programs and 219.9 available positions.<sup>1,2</sup> However, relatively few fellowship-trained orthopaedic sports medicine surgeons are appointed as team physicians throughout their career, and even fewer are appointed to a professional sports team.<sup>12</sup> In general, professional team physician appointments are available to select physicians who have achieved a high level of professional status and reputation within the sports medicine community. Given the in-depth expertise, unique skillset, and time commitment required to adequately care for athletes, it is no surprise that only some surgeons are able and willing to ascend to this level in their field. Currently, little is known about the career path

trajectories of head team physicians and the teams' criteria for picking these physicians.

Dr Joel Boyd,<sup>4</sup> who has served as a head team physician at the collegiate, professional, and Olympic levels, wrote about becoming and being a team physician. He described the process as a highly political one and even mentioned a new trend wherein the right to serve the team is awarded to the highest bidder. Boyd indicated that once appointed, team physicians must be excellent at building relationships, communicating, controlling the flow of information, and managing stakeholders. Regardless of their specialty training, team physicians must be skilled at handling a variety of different health problems and act as the quarterback for each player's comprehensive medical care.<sup>4</sup> To address these needs and adequately prepare physicians for these roles, the American College of Sports Medicine, American Medical Society for Sports Medicine, and the American Orthopaedic Society of Sports Medicine hold an annual Advanced Team Physician Course. In recent years, this course has specifically focused on developing the aforementioned leadership skills required to direct interdisciplinary sports medicine teams and effectively coordinate holistic care for athletes.<sup>17</sup>

The formal training, professional characteristics, accolades, and expertise required to become a head team physician remain unclear, and there is little research on the topic.<sup>4</sup> A 2016 study found that women are largely underrepresented as head team physicians across major collegiate and professional sports, even though a relatively high proportion of women are trained in sports medicine relative to other orthopaedic subspecialties.<sup>18</sup> This indicates that in addition to modifiable factors, certain unmodifiable factors such as gender may play a subliminal role in the ability of qualified physicians to fill roles as team physicians. Reasons for such discrepancies are unclear and warrant further investigation.

The purpose of this study was to elucidate career path trajectories of current head team physicians, examine disparities in gender representation for head team physicians in various professional sports leagues, and further characterize professional profiles of head team physicians appointed to women's and men's American professional sports. We hypothesized that there would be some commonalities in career trajectory between head team physicians, that female physicians would be underrepresented as head team physicians in both men's and women's professional sports leagues, and that differences would exist in professional profiles of head team physicians between different sports leagues.

## METHODS

This was a cross-sectional study of head team physicians in 8 major professional sports leagues in the United States: American football (National Football League [NFL]), baseball (Major League Baseball [MLB]), basketball (National Basketball Association [NBA] and Women's National Basketball Association [WNBA]), hockey (National Hockey League [NHL] and National Women's Hockey League

[NWHL]), and soccer (Major League Soccer [MLS] and National Women's Soccer League [NWSL]). Only teams founded before 2020 and those with publicly listed team physicians were included in this study. Inclusion criteria for physicians included having either a doctor of medicine (MD) or doctor of osteopathic medicine (DO) degree, being named a head team physician (if a team had 2 team physicians, both were considered head team physicians), and being affiliated with a professional sports team. Physicians who were employed by >1 professional sports team were included multiple times under each of the teams that they represented. Nonphysicians, team physicians not specifically designated as head team physicians, and physicians affiliated with collegiate and developmental league teams were not included in this study.

Head team physicians were identified using online search engines and team websites. Demographic information for each physician was gathered through online searches. Demographic variables of interest included gender, medical specialty, medical school, residency, fellowship, years in practice, clinical practice type, and geographic practice setting. Information was also gathered on physician research productivity using the Author Search tool on Scopus.

Descriptive statistics, including means, standard deviations, percentages, and proportions, were tabulated. Differences according to league type (men's vs women's) were analyzed using the chi-square test for categorical variables and the *t* test for continuous variables. Nonparametric means were compared using the Mann-Whitney *U* test. Bonferroni correction was applied for multiple comparisons.  $P < .05$  was set for statistical significance.

## RESULTS

A total of 8 professional sports leagues and 172 professional sports teams were included in this study: 32 NFL teams, 30 MLB teams, 30 NBA teams, 12 WNBA teams, 31 NHL teams, 5 NWHL teams, 22 MLS teams, and 10 NWSL teams. Of the 172 teams, 145 (84%) were in the men's sports leagues, whereas 27 (16%) were in the women's sports leagues. There were a total of 183 head team physicians. Only 11 (6.4%) teams had multiple head team physicians, and 13 (7.1%) physicians served as head team physicians for multiple professional sports teams. Demographic information for head team physicians by sports league can be found in Table 1.

Of the 183 head team physicians identified, 170 were men (92.9%) and 13 were women (7.1%). A significant difference was observed in gender representation of head team physicians according to league type. Whereas 148 of 153 (96.7%) head team physicians in men's sports leagues were men, 22 of 30 (73.3%) head team physicians in women's sports leagues were men ( $P < .001$ ) (Figure 1).

No significant difference was observed among the men's sports leagues in head team physician gender representation, as all of the leagues had predominantly male physicians. We observed a difference in head team physician gender representation among women's sports leagues:

TABLE 1  
Demographic Characteristics of Head Team Physicians by Professional Sports League<sup>a</sup>

	NFL	MLB	NBA	WNBA	NHL	NWHL	MLS	NWSL
Teams, n	32	30	30	12	31	5	22	10
Head team physicians, n	34	30	35	14	32	5	22	11
Orthopaedic surgeons	29 (85)	21 (70)	27 (77)	23 (72)	23 (72)	3 (60)	16 (73)	5 (45)
Gender								
Male	33 (97)	29 (97)	33 (94)	8 (57)	32 (100)	4 (80)	21 (95)	10 (91)
Female	1 (3)	1 (3)	2 (6)	6 (43)	0 (0)	1 (20)	1 (5)	1 (9)
Practice type								
Private practice	12 (35)	15 (50)	19 (54)	6 (43)	16 (50)	2 (40)	16 (73)	5 (45)
Academic	22 (65)	15 (50)	16 (46)	8 (57)	16 (50)	3 (60)	6 (27)	6 (55)
Practice setting								
Urban	27 (79)	23 (77)	29 (83)	12 (86)	22 (69)	4 (80)	15 (68)	10 (91)
Suburban/rural	7 (21)	7 (23)	6 (17)	2 (14)	10 (31)	1 (20)	7 (32)	1 (9)
No. of publications	42.8	42.2	49.6	34.7	39	25.8	24.7	28.7

<sup>a</sup>Data are reported as n (%) unless otherwise noted. MLB, Major League Baseball; MLS, Major League Soccer; NBA, National Basketball Association; NFL, National Football League; NHL, National Hockey League; NWHL, National Women’s Hockey League; NWSL, National Women’s Soccer League; WNBA, Women’s National Basketball Association.

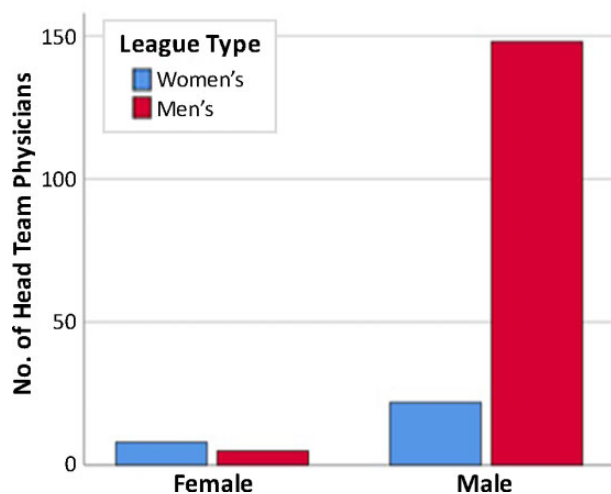


Figure 1. Gender representation of head team physicians between men’s and women’s sports leagues.

57.1% of head team physicians in the WNBA were men, 90.9% in the NWSL were men, and 80.0% in the NWHL were men. However, these differences were not statistically significant due to small sample size of head team physicians in women’s sports (n = 30).

Years in practice ranged from 0 to 9 years (8.2%), 10 to 19 years (35.5%), 20 to 29 years (41.2%), and ≥30 years (16.4%) (Table 2). Head team physicians representing men’s sports teams had 22.4 years of practice experience on average compared with 15.9 years among head team physicians representing women’s sports teams (P < .001) (Figure 2).

Team physicians were more likely to practice in urban (77.6%) than in suburban/rural (22.4%) settings, but we found no differences in geographic practice type according to league type (P = .31). Head team physicians were distributed between predominantly private (49.7%) and academic (50.3%) practices. No significant differences were

observed between sports or league gender in practice type (private vs academic; P = .507).

Head team physicians in all sports reported significant research productivity, with a mean number of publications per head team physician of 39.7 publications and a range of 0 to 582 publications per physician. The mean number of publications among head team physicians covering men’s and women’s sports was 40.8 and 31.0, respectively, but this did not reach significance (P = .098). Head team physicians representing the NFL, MLB, NBA, and NHL had higher mean numbers of publications (42.8, 42.2, 49.6, and 39.0, respectively) compared with the WNBA, NWSL, NWHL, and MLS (34.7, 28.7, 25.8, and 24.7, respectively) (Table 1).

The most common physician specialties were orthopaedic surgery (70.0%) and primary care sports medicine (19.1%); other specialties included internal medicine, pulmonology, physical medicine and rehabilitation, emergency medicine, ophthalmology, general surgery, and cardiothoracic surgery (Figure 3). Most (75.6%) professional sports teams had at least 1 orthopaedic surgeon as a head team physician. However, considerable variability was observed between physicians according to gender and league type. Men’s league head team physicians were most likely to be orthopaedic surgeons, whereas women’s league head team physicians were less likely to be orthopaedic surgeons (75.8% vs 40.0%; P = .001). NFL (90.6%) and NBA (90.0%) teams had a higher proportion of at least 1 orthopaedic surgeon on their staff compared with NWSL (50.0%) and WNBA (33.3%).

Location of residency training showed corollary trends with the location of head team physician appointment, with almost half (46.5%) of all head team physicians pursuing residency training in the same state in which they were later appointed as head team physicians. We found a weaker relationship between the location of team physicians’ appointment and the location of medical school training (34.4%) and fellowship training (28.4%) (Table 3).

TABLE 2  
Years in Practice for Head Team Physicians According to Professional Sports League<sup>a</sup>

Years in Practice	NFL	MLB	NBA	WNBA	NHL	NWHL	MLS	NWSL
0-9	2 (6)	0 (0)	5 (22)	1 (7)	2 (6)	0 (0)	1 (5)	5 (45)
10-19	11 (32)	8 (27)	5 (22)	9 (64)	12 (38)	3 (60)	7 (32)	3 (28)
20-29	13 (38)	15 (50)	1 (4)	3 (21)	14 (44)	2 (40)	11 (50)	3 (28)
≥30	8 (26)	7 (23)	12 (52)	1 (7)	4 (13)	0 (0)	3 (14)	0 (0)

<sup>a</sup>Data are reported as n (%). MLB, Major League Baseball; MLS, Major League Soccer; NBA, National Basketball Association; NFL, National Football League; NHL, National Hockey League; NWHL, National Women’s Hockey League; NWSL, National Women’s Soccer League; WNBA, Women’s National Basketball Association.

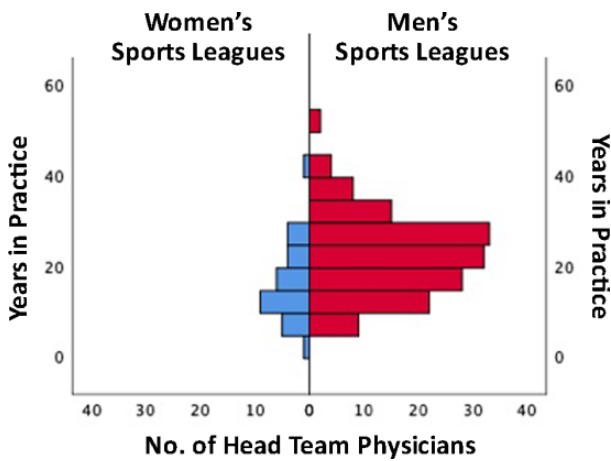


Figure 2. Years in practice among head team physicians for men’s and women’s sports leagues. A significant difference by league type was seen ( $P < .001$ ).

A high percentage of head team physicians trained at 1 of 3 institutions: the Hospital for Special Surgery (20.3%), Cedars-Sinai Kerlan-Jobe Institute (13.3%), and the Steadman Clinic (6.3%). Combined, these 3 programs accounted for more than one-third (39.9%) of all orthopaedic head team physicians and more than half of all orthopaedic NFL (51.7%), NHL (52.2%), and WNBA (75.0%) head team physicians (Table 4).

DISCUSSION

We found that the majority of head team physicians were orthopaedic surgeons, had been in practice for 20 to 29 years (41.2%), worked in urban communities (77.6%), and practiced in either private (49.7%) or academic (50.3%) settings. Head team physicians, on average, were relatively prolific in their academic productivity, with a mean of 39.7 publications per physician. However, the number of publications per physician varied considerably from 0 to

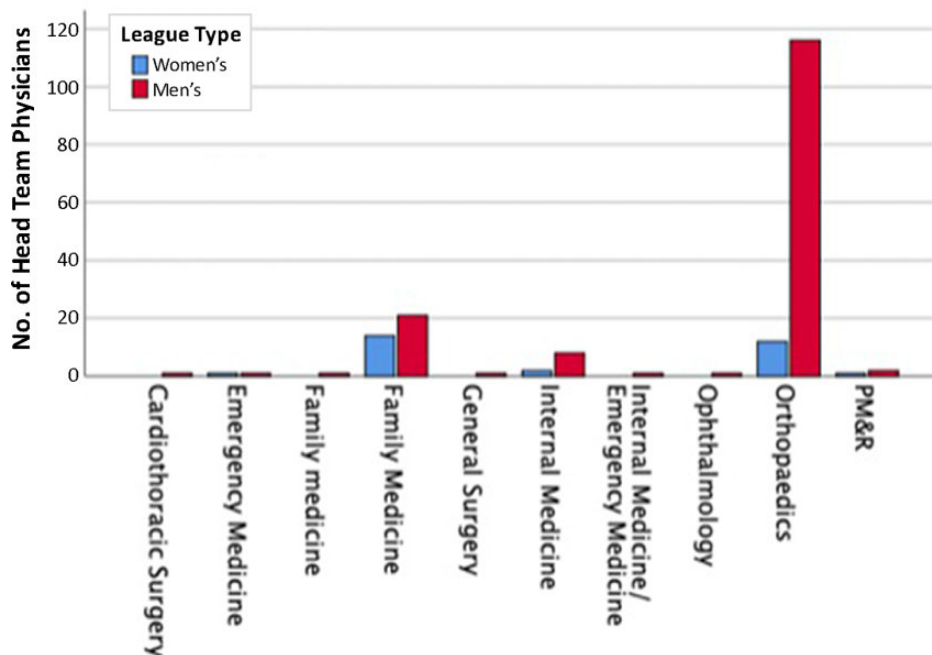


Figure 3. Medical specialty representation for men’s and women’s leagues.

TABLE 3  
Appointment Location of Head Team Physicians According to Training Location<sup>a</sup>

	NFL	MLB	NBA	WNBA	NHL	NWHL	MLS	NWSL
Medical school in same state as team physician	14 (41)	9 (30)	12 (34)	2 (14)	14 (44)	2 (40)	7 (32)	3 (28)
Residency in same state as team physician	16 (47)	16 (53)	17 (49)	3 (21)	15 (47)	2 (40)	11 (50)	5 (45)
Fellowship in same state as team physician	12 (35)	6 (20)	6 (17)	5 (36)	12 (38)	2 (40)	6 (27)	3 (28)

<sup>a</sup>Data are reported as n (%). MLB, Major League Baseball; MLS, Major League Soccer; NBA, National Basketball Association; NFL, National Football League; NHL, National Hockey League; NWHL, National Women's Hockey League; NWSL, National Women's Soccer League; WNBA, Women's National Basketball Association.

TABLE 4  
Training of Head Team Physicians According to 3 Well-known Sports Medicine Institutions

Training Institution	NFL	MLB	NBA	WNBA	NHL	NWHL	MLS	NWSL
Hospital for Special Surgery	8 (28)	2 (10)	5 (19)	1 (25)	6 (26)	0 (0)	4 (25)	0 (0)
Steadman Clinic	2 (7)	2 (10)	0 (0)	0 (0)	3 (6)	0 (0)	1 (6)	0 (0)
Cedars-Sinai Kerlan-Jobe	5 (17)	2 (10)	3 (11)	2 (50)	3 (13)	0 (0)	2 (13)	0 (0)
Total	15 (52)	6 (29)	8 (30)	3 (75)	12 (44)	0 (0)	7 (44)	0 (0)

<sup>a</sup>Data are reported as n (%). MLB, Major League Baseball; MLS, Major League Soccer; NBA, National Basketball Association; NFL, National Football League; NHL, National Hockey League; NWHL, National Women's Hockey League; NWSL, National Women's Soccer League; WNBA, Women's National Basketball Association.

582, and no significant difference was observed between sports. Interestingly, almost half (46.5%) of all orthopaedic head team physicians covered teams in the same state in which they completed their residency training, and more than one-third (39.9%) of orthopaedic head team physicians completed some of their training at 1 of 3 highly regarded sports medicine training centers (Hospital for Special Surgery, The Steadman Clinic, and Cedars-Sinai Kerlan-Jobe). To the best of our knowledge, no previous study has examined the career path trajectories of head team physicians and examined possible contributing factors for acquiring team physician appointments.

We found that most (70.0%) professional sports head team physicians were orthopaedic surgeons, followed by sports medicine-trained family physicians (19.1%). Additionally, we found that 75.6% of teams had at least 1 orthopaedic surgeon on staff as a head team physician. Physicians with moderately higher than average years in practice accounted for the largest proportion of head team physicians. Although younger physicians may lack the necessary experience and accolades required for such a role, it is likely that the stress and time demands associated with being a team physician may act as deterrents for more senior-level physicians who have other career responsibilities. We found no difference between private practice and academic settings with regard to head team physician representation. However, given that the average head team physician had 40 publications, there is certainly an implied level of academic accomplishment expected of head team physicians. Academic productivity often serves as social capital in the medical community. As it pertains to aspiring head team physicians, research productivity can bolster in any public relations efforts being made by the physician.

We found that currently appointed head team physicians often trained in the same geographic location where they eventually practiced, with about half (46.5%) completing their residency in the same state, more than one-third (34.4%) completing medical school in the same state, and more than one-quarter (28.4%) completing their fellowship in the same state. Furthermore, although there are 171 orthopaedic surgery residency programs and 95 orthopaedic sports medicine fellowships in the United States, just 3 institutions contributed to almost 40% of all head team physicians in professional American sports. Possible reasons for this finding include mentorship from current professional sports head team physicians, referrals from well-connected mentors and peers, and experience caring for professional athletes during their training. Because all 3 of these programs regularly employ professional sports head team physicians, it is likely that these institutions attract superior talent and cultivate and develop their pipeline of team physicians to strengthen their reputation in professional sports.

We found that 13 (7.1%) head team physicians were women. Similarly, in a recent study of all NBA, MLB, NFL, and WNBA team physicians, O'Reilly et al<sup>12</sup> found that 6.7% of all professional sports team physicians were women. Of note, this is considerably lower than female representation in collegiate-level team physicians of 18.1%.<sup>2</sup> Additionally, we found a discrepancy in female head team physician representation between men's and women's professional sports, with 96.7% male physicians covering men's sports teams and 73.3% male physicians covering women's sports teams. Looking closer, 57.1% of head team physicians in the WNBA were men, 90.9% in the NWSL were men, and 80% in the NWHL were men. When we examined number of years in practice, head team

physicians covering men's sports teams had on average 6.5 more years of experience compared with those covering women's sports teams (22.4 vs 15.9 years). Last, men's sports teams were more likely to be covered by an orthopaedic surgeon (75.8%), whereas women's sports teams were less likely (40.0%).

Gender disparities are not new to orthopaedics.<sup>§</sup> Beginning with the 2017-2018 application cycle, matriculated medical students have been consistently >50% women, and that number continues to rise.<sup>2</sup> However, just 13% to 14% of orthopaedic surgery residents are women, with only 5.3% female representation in the American Academy of Orthopaedic Surgeons (AAOS) according to the 2018 AAOS census statement.<sup>1,14,18</sup> Furthermore, women represent approximately 9% of sports medicine fellowship applications and make up about 6.5% of the current AOSSM membership according to recent data.<sup>6,12</sup> Given that 70% of all head team physicians are orthopaedic surgeons and considering the gender disparities present within the field of orthopaedics, it is no surprise that women hold only 7.1% of head team physician appointments in professional sports.

We found that men occupied a majority of head team physician appointments among women's professional leagues and overwhelmingly held team physician appointments in men's leagues. We also found that team physicians covering women's leagues had less practice experience and were less likely to be orthopaedic surgeons. Reasons for these discrepancies are unclear, particularly as relates to gender. Prestige and monetary compensation may drive differences in practice experience across men's and women's professional leagues.

### Limitations

This study had several limitations. Data represented on online profiles may be outdated or inaccurately represent head team physician appointment. Additionally, we were unable to capture the full spectrum of demographic variables that may have implicitly or explicitly played a role in head team physician appointment. For example, although we would have liked to include other potentially contributing factors, such as physician race, as a potential bias, we were unable to do so without directly contacting current head team physicians. Future studies should aim to further research this topic and ascertain any other factors that may affect head team physician selection and retention. The creation and maintenance of a regularly updated and organized team physician directory would be helpful to further research this topic; however, only the NFL has such a directory. The variability of available information between different leagues raises the possibility of selection bias, with certain leagues being more heavily weighted than others. Last, it is unclear whether the findings in this study for professional sports head team physicians could be generalized

to the entire team physician population at the professional level or to those appointed to positions at the collegiate and high school levels.

### CONCLUSION

Head team physicians covering American professional sports have a variety of practice experience, academic productivity, practice type, and subspecialty training. We found disparities in gender, practice experience, and physician subspecialty representation among head team physicians when we compared men's and women's professional sports. Numerous factors affect head team physician appointment, but further research on this subject matter may shed light on possible areas for improvement aimed at eliminating disparities in head team physician representation.

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