

Managing the Return to Football During the COVID-19 Pandemic

A Survey of the Head Team Physicians of the Football Bowl Subdivision Programs

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Background: COVID-19 is a severe respiratory virus that spreads via person-to-person contact through respiratory droplets. Since being declared a pandemic in early March 2020, the World Health Organization had yet to release guidelines regarding the return of college or professional sports for the 2020-2021 season.

Purpose: To survey the head orthopedic surgeons and primary care team physicians for the National Collegiate Athletic Association (NCAA) Football Bowl Subdivision (FBS) football teams so as to gauge the management of common COVID-19 issues for the fall 2020 college football season.

Study Design: Cross-sectional study.

Methods: The head team orthopaedic surgeons and primary care physicians for all 130 FBS football teams were surveyed regarding their opinions on the management of college football during the COVID-19 pandemic. A total of 30 questions regarding testing, return-to-play protocol, isolating athletes, and other management issues were posed via email survey sent on June 5, 2020.

Results: Of the 210 team physicians surveyed, 103 (49%) completed the questionnaire. Overall, 36.9% of respondents felt that it was unsafe for college athletes to return to playing football during fall 2020. While the majority of football programs (96.1%) were testing athletes for COVID-19 as they returned to campus, only 78.6% of programs required athletes to undergo a mandatory quarantine period before resuming involvement in athletic department activities. Of the programs that were quarantining their players upon return to campus, 20% did so for 1 week, 20% for 2 weeks, and 32.9% quarantined their athletes until they had a negative COVID-19 test.

Conclusion: While US Centers for Disease Control and Prevention guidelines evolve and geographic regions experience a range of COVID-19 infections, determining a universal strategy for return to socialization and participation in sports remains a challenge. The current study highlighted areas of consensus and strong agreement, but the results also demonstrated a need for clarity and consistency in operations, leadership, and guidance for medical professionals in multiple areas as they attempt to safely mitigate risk for college football players amid the COVID-19 pandemic.

Keywords: COVID-19; football; return to sport; antigen testing

COVID-19 is a severe acute respiratory syndrome (SARS) that spreads via person-to-person contact through respiratory droplets. Since officially being labeled as a pandemic by the World Health Organization (WHO) on March 11, 2020, COVID-19 has continued its spread throughout the country, primarily due to its ability to be transmitted by asymptomatic infected individuals.⁶ As of July 31, 2020,

WHO reported 17,106,007 global cases of COVID-19, with 668,910 of these cases being fatal. In the United States alone, there have been 4,388,566 cases, with 150,054 deaths. The Centers for Disease Control and Prevention (CDC) has recommended several practices to limit the spread of this virus, including practicing “social distancing,” wearing a face cover when in public places, and washing hands often, especially before touching the eyes, mouth, or nose.³ When addressing specific policies regarding management of sports during COVID-19, the CDC has only made general guidelines for youth sports, and no

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policies have been determined for college sports. The CDC recommends considering several factors for returning to sport, leaving the detailed management up to individual teams. Likewise, the National Collegiate Athletic Association (NCAA) has not issued definitive rules and regulations for the return of collegiate athletic competition but has issued general guidelines. These general guidelines include limiting the amount of shared contact both during and outside of play, limiting the amount of contact with equipment, considering changing the size of the team, and reducing the amount of travel necessary to play other teams. At the time of this study, more specific guidelines had not been issued to guide head team physicians, athletic trainers, or athletic departments.

COVID-19 has affected sports across the country, including both collegiate and professional sports leagues. The first reported case of the virus in the 4 major North American sports leagues occurred on March 11, 2020, when Rudy Gobert of the Utah Jazz National Basketball Association (NBA) team tested positive just before that night's game. Since that first diagnosis, sports in North America have been suspended, with varying plans for resuming in mid to late summer of last year. Most prominent collegiate and professional sports rely heavily on contact between players, which was just one of the many roadblocks to resuming sports in the summer and fall. In football, every play involves face-to-face blocking and usually results in 1 player being forced to the ground by another. As COVID-19 is spread by respiratory droplets, players will inevitably come in close contact with droplets from other players during the course of play.

Preventing the spread of the virus during games was only part of the problem that sports faced in the months since COVID-19 was detected. The time players spend off the courts and fields—where they will still be in close contact with teammates, coaches, trainers, and medical professionals—is of concern for increased exposure. Locker rooms, media sessions, athletic training rooms, and equipment rooms are some of the areas that need to be modified to keep the athletes, coaches, and support staff safe. This is a difficult task that requires effort and planning from league commissioners down to team physicians and athletic trainers, as well as cooperation from athletes, coaches, and other staff members. Isolating athletes is much easier outside the setting of college athletics since professional athletes can maintain a strict bubble, with only essential personnel necessary for professional competition. For

example, the NBA released a 100-page document to their teams that detailed their plan for a late-July restart, which was centered around creating a bubble of players and teams in Orlando, Florida. This extensive plan included procedures for isolating players that test positive, rules to limit contact between players and the outside world, and regulations on player-player interaction outside of games.

College athletics faces unique challenges with respect to return to sport in the setting of the ongoing COVID-19 pandemic. In NCAA Division 1 Football alone, there are 130 teams, each with hundreds of players and staff, located throughout different geographic regions and campus settings. A bubble is much more difficult to create in college football owing to the players' interaction with other students, travel to away games, and lack of strict restrictions outside of athletics. Because of these inherent challenges, the evolving nature of the pandemic, and the lack of clear and enforceable guidelines from major governing bodies, individual conferences, schools, athletic departments, and medical staff are currently constructing protocols in an attempt to keep athletes, coaches, and staff as safe as possible. Considerable communication and consensus building is necessary in such an environment.

The purpose of this study was to survey the head orthopedic surgeon and primary care team physicians for the 130 Football Bowl Subdivision (FBS) football teams in order to identify key issues related to management of a return to play protocol in the current COVID-19 pandemic for the 2020 college football season. We hypothesized that there would be different operational approaches in testing and attitudes regarding play with their athletes.

METHODS

Because of the survey nature of the study, as well as the inclusion of anonymous responses, this study was exempt from approval from the institutional review board. The head team orthopaedic surgeons and primary care physicians for the 130 FBS football teams were emailed a survey regarding their opinions on the management of college football athletes during the COVID-19 pandemic. The emails of the head team physicians were available from a previous study conducted by 1 of the lead authors (E.C.M.). For those schools where no email address for their head team physicians was available, this information was queried on the university's athletic department website. Email addresses

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Ethical approval was not sought for the present study.

for 127 of 130 of the FBS schools' head team orthopaedic surgeons and 83 of 130 of the head team primary care physicians were obtained. Thirty questions regarding testing, return to play protocols, isolating athletes, etc, were posed to the 2 football head team physicians for each school; the full list of questions is available in the Appendix. For those physicians who did not initially participate, a weekly reminder was sent from June 5 to 19, 2020.

RESULTS

The survey was sent to 127 orthopaedic surgeon team physicians of the 130 FBS programs. In addition, the survey was sent to 83 of the 130 primary care team physicians at the FBS programs. Of the 210 team physicians surveyed, 103 completed the questionnaire, for a 49.0% response rate. Overall, 63 of the 83 primary care team physicians responded to the survey (75.9% response rate) and 40 of the 127 orthopaedic surgeons responded to the survey (31.5% response rate). When asked about their specialty, 40 of the respondents (38.8%) were orthopedic surgeons, 54 (52.4%) were family medicine physicians, 4 (3.9%) were with pediatricians, 3 (2.9%) were internal medicine physicians, and 2 (1.9%) were physical medicine and rehabilitation physicians.

Of the 103 respondents, 65 (63.1%) felt it was safe for college athletes to return to playing football in fall 2020, while 38 (36.9%) felt it was unsafe. The majority of football programs (96.1%) tested athletes for COVID-19 when they returned to campus, while only 78.6% of programs quarantined players when they returned to campus. Of the programs that quarantined their players upon return to campus, 20% did so for 1 week, 20% for 2 weeks, and 32.9% quarantined their athletes until they had a negative COVID-19 test. Nearly 40% of the teams used electrocardiogram screening of their athletes on their return to campus.

When asked about in-season testing, 57.3% of programs recommended using COVID-19 tests to determine playing eligibility. The majority of those programs recommending COVID-19 testing (54.9%) used standard laboratory polymerase chain reaction tests with a 24- to 48-hour turnaround, and 20.2% used a rapid 1-hour (antigen) test, with the rest still undecided on which test to use. Of those programs testing, the vast majority (71.8%) recommended using a nasopharyngeal swab for their tests. Only 23.3% of programs recommended using an antibody (serologic) test to determine playing eligibility. When asked how often the programs recommended testing to determine playing eligibility, the majority of programs performed in-season testing weekly (51.4%), while 17.5% performed tests 2 to 3 times a week. Around 10% tested based upon athletes' symptoms, and the rest of the programs remained unsure how often they would perform in-season testing. Screening of symptoms is a large component of COVID-19 management; 76.7% of football programs screened athletes for symptoms daily, and 46.6% screened athletes every time they entered athletic facilities (Figure 1). The majority of Division 1 football programs (86.1%) used a combination of questionnaires,

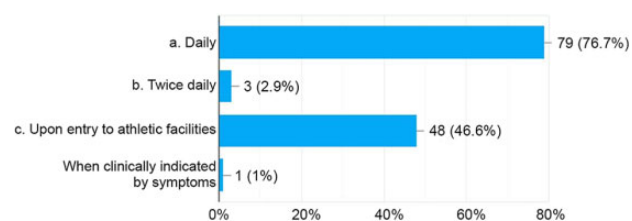


Figure 1. Frequency of screening for COVID-19 symptoms.

self-reporting, and temperature checks to screen their athletes for COVID-19.

Although the CDC has been consistent with what temperature constitutes a fever (100.4°F), only 55.3% of the programs used this temperature to determine a fever when screening for COVID-19. When considering what constitutes a close contact with a COVID-19 patient during sports activities, 65% of physicians surveyed defined it as contact within 6 feet for at least 10 minutes, and 16.5% described it as contact within 6 feet for at least 15 minutes, the latter which is the CDC recommendation. If a player exhibited COVID-19 symptoms while on the road, 58.3% of programs had them travel home separately from the team, while 11.7% let the player travel with the team; 4.9% left them with the home team until asymptomatic and 17.8% of programs were still unsure as of the survey date what their policy will be. Players who tested positive for the disease were to remain in isolation for varying times at the different football programs. Of the programs who responded, 5.9% isolated positive players for 1 week, 22.8% of programs isolated for 10 days, and 35.6% isolated for 2 weeks. Some programs made length of isolation contingent on a time frame as well as COVID-19 test results, with 16.8% requiring 2 weeks of isolation plus 2 negative tests, and 15.8% requiring at least 72 hours of isolation in addition to 2 negative tests.

The recommendations for graduated return to play after a positive COVID-19 test in an asymptomatic athlete also differed among the surveyed physicians, with almost 60% of programs letting the athletes return to sports after 2 weeks, 19.4% allowing them to return after 2 negative tests, and 10.9% allowing return after 10 days of being asymptomatic and in quarantine. In addition, before being allowed to play, 87.1% of team physicians performed cardiology screening on the athletes who previously tested positive. There was no real consensus on which cardiac screening needs to be performed in order to allow an athlete to return after a positive COVID-19 test, with most programs choosing a combination of laboratory tests (ie, troponins, C-reactive protein) and advanced testing (ie, echocardiogram or pulmonary function tests) and electrocardiogram.

Programs also varied as to the question of how far back (ie, how many days before the positive test) contact tracing should be recommended. For individuals who had contact with an asymptomatic player who tested positive, contact tracing began from 2 days before (17.5%), 3 days before (29.1%), 1 week before (26.2%), to >10 days before contact (18.4%). For individuals who had contact with a

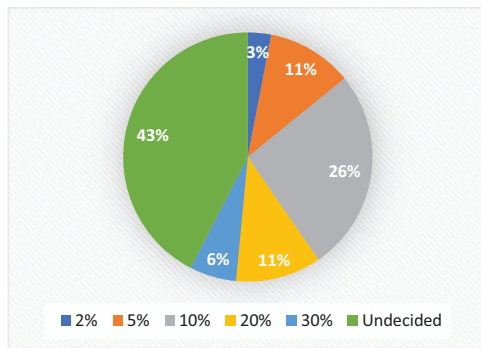


Figure 2. Percentage of team physicians recommending suspension of team activities after positive COVID-19 thresholds of 2%, 5%, 10%, 20%, and 30% of the team.

symptomatic player who tested positive, contact tracing was recommended to start 2 days before (19.4%), 3 days before (28.2%), 7 days (31.1%), and >10 days before contact (17.5%). Quarantining of contacts of COVID-positive athletes was recommended for 2 weeks (54.4%), 1 week (13.6%), 10 days (6.8%), or after 2 negative COVID-19 tests (14.6%).

With regard to how many players needed to test positive before the team physicians recommend shutting down team activities, the largest percentage (43%) of team physicians was unsure how many cases would need to arise on their team before they recommended shutting down team activities (Figure 2). Of the respondents, 26% recommended ceasing team activities if 10% of the team were COVID-19 positive, whereas 11% of the respondents each recommended a threshold of 5% or 20%. Increased funding for workplace modifications, testing, and supplies to help combat COVID-19 was only noted to have occurred at 75.2% of the athletic departments surveyed.

DISCUSSION

The primary finding of this survey of NCAA Division I football team physicians was that 63.1% of respondents felt that it was safe for college athletes to return to football for the fall 2020 season. As professional, collegiate, high school, and recreational sports continue to discuss various components of return-to-play protocols, the central issue is first and foremost the safety and well-being of the athletes, coaches, referees, and other individuals with whom the athletes come into contact in the university setting (classmates, volunteers, etc). In the current study, nearly two-thirds of respondents felt that returning to Division I collegiate football in the fall of 2020 was safe. It is important to note that this survey was conducted between June 5 and June 19, 2020, and the attitudes of the team physicians could have changed and could continue to change as the COVID-19 pandemic evolves throughout the country or region.

At the start of the pandemic, the NCAA halted all collegiate sports and cancelled winter and spring championships in March 2020. Since that time, the NCAA has

published guidance but no binding legislation on rules and regulations for returning to athletics. Therefore, many team physicians, athletic trainers, and school administrators are communicating with one another to establish protocols and best practices to mitigate risk and attempt to return to sports in the safest possible manner. To that end, the current survey of team physicians for NCAA Division I football was conducted in order to establish a set of norms, gauge current attitudes, and identify areas of disparity or lack of consensus.

One area of strong agreement was the need for protective procedures upon athlete return to campus. Nearly all team physicians indicated that they will test athletes for COVID-19 as they arrive back on campus (96%). Nearly 80% stated that athletes will be initially quarantined upon arrival in order to clarify COVID-19 status for individual athletes, mitigate risk of potential infection of teammates, and mitigate risk of exposure and spread within the university community at large. While the recommendation for quarantine and testing was nearly universal, there was less agreement on the duration of quarantine and need for ancillary testing. Current NCAA recommendations and CDC guidelines are not clear or definitive in this area, and there is an identified need for further study in this regard. Our study found that 20% of the programs will quarantine their athletes for 1 week, 20% for 2 weeks, and 32.9% will quarantine their athletes until they have a negative COVID-19 test. Since it can take up to 12.5 days from transmission of the virus to a positive test,⁷ the CDC recommends quarantining individuals for at least 14 days after exposure.

Once the season begins, the challenge of maintaining safety and mitigating risk only increases as teams travel to different cities, states, and geographic regions to participate in games. Athletic departments and conferences have worked to establish protocols with this challenge in mind. However, the novel coronavirus represents an ever-evolving and difficult threat. There is little agreement from team physicians with respect to in-season recommendations. There is near equivalence on the issue of in-season testing, with 57.3% of respondents stating that antigen testing should be conducted in order to determine playing eligibility. While the majority of team physicians state that their teams will use a nasopharyngeal swab for specimen collection, the timing of the testing during the competitive season will not be uniform, with approximately half performing tests with a 24- to 48-hour turnaround for results and less than half recommending weekly testing to determine competition eligibility. Since the incubation time for the COVID-19 virus can be almost 2 weeks, weekly testing is likely to miss some players who might have contracted the virus before the testing but will not test positive for COVID-19. Therefore, because most of the antigen testing for COVID-19 is very sensitive (low false-negatives),⁴ most conferences are now recommending at least a bi- or tri-weekly screening during competition with the advent of cost-effective rapid screening. If more frequent, inexpensive testing, such as loop-mediated isothermal amplification (LAMP) testing, is feasible from a financial and logistical standpoint, this would be preferable to catch the

athletes as soon as they test positive in order to remove them from the team isolation bubble.

Three-fourths of team physicians recommended daily symptom monitoring and screening of athletes in order to monitor for possible COVID-19 infection. Most team physicians will use a combination of self-reporting, temperature checks, and questionnaires to do this monitoring. Approximately 55% of respondents will use 100.4°F as a temperature cutoff for fever. Nearly 30% will use 100.0°F. Current CDC recommendations state that a temperature threshold of $\geq 100.4^\circ\text{F}$ should be utilized for symptom screening. Therefore, even though nearly 45% of the programs will not use this temperature for screening, we recommend the CDC guideline be used in the determination of a fever.

A topic of considerable challenge, debate, and discussion is that of defining a close contact within the context of football. The CDC provides clear guidance on what constitutes a close contact, but how those guidelines translate into a football environment is unknown. For example, the use of masks in the context of football remains a topic of debate, as the parameters for a close contact have yet to be unanimously defined. Because of the intense physical activity that occurs during sports, wearing a respiratory mask during games might not be a feasible option for some athletes, as it is well understood that facemasks induce hypercapnia and hypoxia during aerobically demanding activities.² However, it should be noted that because there are some positions that are less aerobically demanding than others, mask adherence may be position-dependent and should not be discouraged in the athletes who wish to wear them. Additionally, although some players such as linemen may only be engaged for a matter of seconds during any given play, bodily secretions such as sweat and saliva will likely be exchanged. Whether this situation should be considered “close contact” remains unclear because the players are not within 6 feet for more than 15 minutes.

Nearly two-thirds of respondents stated that their definition of a close contact will be closer than 6 feet for 10 minutes, even though the CDC defined this as 6 feet for more than 15 minutes. Since most college football players have a roommate to whom they are often in close proximity, it was nearly unanimous that roommates would be considered close contacts. Less universal was the point at which contact tracing should begin after a player has tested positive. Responses ranged from 2 days before a positive test of asymptomatic patients to as long as 2 weeks. For symptomatic players, nearly one-third of respondents recommend contact tracing for 3 days before the onset of symptoms, another one-third recommend 7 days, with the remaining one-third recommending a range from 2 days to 14 days.

Similarly, there was no consensus on the amount of time that close contacts should be quarantined. Approximately half of respondents chose 2 weeks for this time frame, but there was again a wide range of timelines provided, with some respondents also incorporating a negative COVID-19 test in order to clear quarantine. Again, since the incubation period of COVID-19 is almost 2 weeks,⁷ we recommend following the CDC guidelines and quarantining athletes exposed to a positive player for 2 weeks. Because nearly all football players are in close contact to one another, it might

be considered prudent to spot test all of the team if a player tests positive through an interaction with another member of the team. However, only one-third of respondents recommended spot testing if a player tests positive.

Another unknown was what to do with an athlete who becomes symptomatic or tests positive for COVID-19 while traveling for an away game. Most respondents (58.3%) would not allow the player to travel back to their home institution with the rest of the team, with only 12% of team physicians stating that they would allow the player to travel back with the team. The ideal logistics of how and when to allow travel back home remain unclear, which is reflected in many of the team physicians responding that they do not have a plan for this contingency.

A considerable challenge remains with respect to return to play after COVID-19 infection. Optimal duration of isolation, time to safely return to play, additional laboratory tests, and diagnostic testing all remain unclear in the context of football participation. Recently, the American College of Cardiology published an expert opinion paper outlining return-to-play protocols and strategies after a confirmed COVID-19 infection.¹ This paper included a recommendation for a minimum 2-week rest period for COVID-19 positive athletes, with additional cardiopulmonary testing and laboratory screenings depending on presence or absence of symptoms, as well as symptom severity. The authors acknowledged a key limitation of their position paper¹ and advised additional study: “Given the clinical uncertainty regarding the prevalence and magnitude of post-infectious complications, we acknowledge that our proposed approach is conservative and subject to change when the prevalence of cardiac injury in non-hospitalized athletes is better defined.” Our survey demonstrated considerable disagreement among respondents with regard to the duration of isolation for asymptomatic COVID-19 positive athletes, how soon return to play can safely occur after a positive COVID-19 test in an asymptomatic player, and which laboratory screenings and tests should be conducted before a player is allowed to return. Additionally, recommendations have been made clear regarding cardiac clearance for symptomatic athletes after testing positive for COVID-19.⁵ While most expert opinions and NCAA recommendations outline graded return to play after COVID-19 infection, the specifics of such a protocol are unclear and lack evidence-based foundations. The results of the current survey reflect these current limitations.

Finally, there was also significant disparity on what percentage of the roster would need to test positive before a team should cease all organized team activities. The most common answer to this question was “undecided” (43%); however, 25.2% of respondents stated this would have to be over 10% of the team, and 10.7% answered it would have to be 5% of the team. With a football roster of over 100 players, this would need to be 10 to 20 players. Several programs have already shut down their team activities with even less than this owing to concerns of increased risk of disease transmission.

This survey is not without limitations. As with any survey, this paper only represents the survey respondents' attitudes towards COVID-19 at the time of the survey.

However, we feel that these data provide a good baseline for how to deal with COVID-19 and other potentially virulent pandemics in the future. Most of the questions still apply to the treatment and management of COVID-19, especially with those sports who are just beginning to compete, such as winter sports. Additionally, many smaller universities are still dealing with how to bring back athletes to their campuses and allow them to compete. This snapshot of the attitudes of team physicians can help reiterate how complex the treatment of athletes is and give individual team physicians some idea of what other programs are doing to help them manage returning athletes/competing athletes.

Additionally, the current COVID-19 global pandemic has seen rapidly evolving scenarios and challenges, and the topic of return to sports is no different. At the time of this survey, infection rates and total confirmed cases in the United States were somewhat stable. However, since conclusion of the survey, infection rates in the southern United States, in the "Sunbelt Region," had increased significantly. This has led to increased caution by government officials with regard to local policies, but the same response is also likely with team physicians as it pertains to safe participation in college athletics. Another limitation is that while this survey was distributed to all head orthopaedic surgeons and primary care team physicians for all FBS football programs, not all physicians responded. However, the total response of 103 team physicians is likely to be representative of the group as a whole, as this constituted nearly half of the overall cohort and because responses were received from diverse geographic locations, conference affiliations, and program profiles. Finally, while the stratification of survey responses by specialty may have helped identify varying attitudes between fields (primary care vs orthopaedics), the low response rate and sample size was too small to have significant meaning.

CONCLUSION

As with so much of the COVID-19 pandemic, there is much unknown and much to still learn. Although the CDC guidelines evolve and geographic regions experience a range of COVID-19 infections, determining a universal strategy for the return to socialization and participation in sports remains a challenge. The current study highlights areas of consensus and strong agreement, but it also demonstrates a need for clarity and consistency in operations, leadership, and guidance for medical professionals in multiple areas as they attempt to safely mitigate risk for college football players amid the COVID-19 pandemic.

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APPENDIX

Survey: management of college football athletes during the COVID-19 pandemic.

1. What is your sports medicine specialty? (*select only 1 option*)
 - a. Family practice
 - b. Orthopaedic surgeon
 Other: _____
2. Do you feel that it is safe for college athletes to return to football this fall during the COVID-19 pandemic? (*select only 1 option*)
 - a. Yes
 - b. No
3. How familiar are you with the NCAA guidelines for resocialization of collegiate sport? (*select only 1 option*)
 - a. Very familiar
 - b. Somewhat familiar
 - c. Familiar
 - d. Not familiar
 - e. Have not heard of them
4. Are you COVID-19 testing athletes as they arrive back on campus? (*select only 1 option*)
 - a. Yes
 - b. No
5. Are you quarantining players as they arrive back on campus? (*select only 1 option*)

- a. Yes
- b. No
6. If yes, for how long? (*select only 1 option*)
 - a. 72 hours
 - b. 1 week
 - c. 2 weeks
 - d. Until negative COVID-19 testOther: _____
7. Are you screening your returning athletes with EKGs when they return to campus? (*select only 1 option*)
 - a. Yes
 - b. No
8. Do you recommend COVID-19 antigen testing in-season to determine playing eligibility? (*select only 1 option*)
 - a. Yes
 - b. No
9. If you recommend testing in-season, which test do you recommend? (*select only 1 option*)
 - a. Rapid 1-hour test
 - b. Test with 24- to 48-hour resultsOther: _____
10. What type of test are you using for your athletes? (*select only 1 option*)
 - a. Nasal swab
 - b. Nasopharyngeal swab
 - c. Oral mucosa swabOther: _____
11. Do you perform an antibody (serologic) test for athletes to determine playing eligibility? (*select only 1 option*)
 - a. Yes
 - b. No
12. How often do you believe in-season testing should be performed? (*select only 1 option*)
 - a. Weekly
 - b. Twice weekly
 - c. 3x/weekOther: _____
13. How often are you screening your athletes for symptoms of COVID-19? (*select all that apply*)
 - a. Daily
 - b. Twice daily
 - c. Upon entry to athletic facilitiesOther: _____
14. What screening modality are you using at your athletic facilities? (*select all that apply*)
 - a. Self-reporting
 - b. Temperature checks
 - c. Questionnaires
 - d. Combination of all threeOther: _____
15. What is your temperature threshold for considering someone symptomatic (in Fahrenheit)? (*select only 1 option*)
 - a. 99.5°
 - b. 100.0°
 - c. 100.2°
 - d. 100.4°
 - e. Other temperature
16. What is your definition of what constitutes a close contact of a COVID-19 positive patient during sport? (*select only 1 option*)
 - a. Contact within 6 ft for 10 min
 - b. Contact within 10 ft for 10 min
 - c. Contact within 3 ft for 10 min
 - d. Contact with 1 ft for 10 minOther: _____

17. Do you consider athlete roommates close contacts? (*select only 1 option*)
- Yes
 - No
18. What will you do with a player who becomes symptomatic while on the road? (*select only 1 option*)
- Leave them with home team
 - Let them come back with the team
 - Travel home separately from rest of the team
- Other: _____
19. How long do you keep an asymptomatic COVID-19 positive athlete in isolation? (*select only 1 option*)
- 1 week
 - 2 weeks
 - 2 weeks plus 2 negative COVID-19 tests
 - 72 h plus 2 negative COVID-19 tests
- Other: _____
20. How soon after a positive COVID-19 test in an asymptomatic athlete would you let them return to sport? (*select only 1 option*)
- 72 hours
 - 1 week
 - 2 weeks
 - After 2 negative COVID-19 tests
- Other: _____
21. Do you recommend laboratory screening before allowing a COVID-19 positive athlete to return to play? (*select all that apply*)
- Yes
 - No
 - If so, which?
 - Other:
22. Do you perform cardiology screening before allowing a COVID-19 positive athlete to return to play? (*select only 1 option*)
- Yes
 - No
23. If you perform cardiology screening for COVID-19 patients to return to play, what type of screen are you utilizing? (*select all that apply*)
- EKG
 - Labs
 - Echo ultrasound
 - Combination of the three
- Other: _____
24. If an athlete tests positive for COVID-19 but is asymptomatic, for how many days prior to diagnosis will you perform contact tracing (for the purpose of quarantining close contacts)? (*select only 1 option*)
- 3 days
 - 1 week
 - 10 days
 - 2 weeks
- Other: _____
25. If an athlete tests positive for COVID-19 and is symptomatic, for how many days prior to this athlete's symptom onset will you perform contact tracing (for the purpose of quarantining close contacts)? (*select only 1 option*)
- 3 days
 - 7 days
 - 10 days
 - 14 days
- Other: _____
26. How long will you quarantine close contacts? (*select only 1 option*)
- 72 hours
 - 1 week
 - 10 days
 - weeks
 - After 2 negative COVID tests
- Other: _____

27. If you have an athlete test positive for COVID-19, do you implement spot testing of all teammates? (*select only 1 option*)
- a. Yes
 - b. No
28. Has your athletic department been willing to listen to your medical recommendations for infection control measures during sport? (*select only 1 option*)
- a. Yes
 - b. No
29. What percentage of a team roster needs to test positive before you recommend ceasing all team activities? (*select only 1 option*)
- a. 2%
 - b. 5%
 - c. 10%
 - d. 20%
 - e. 30%
- Other: _____
30. Has your athletic department increased funding to pay for testing, supplies, workspace modifications, etc. due to increased COVID-19 infection control? (*select only 1 option*)
- a. Yes
 - b. No