Diagnostic Radiology in the NBA Bubble: Implementation, Collaboration, and Communication

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Introduction

- The National Basketball Association (NBA) Bubble was an isolated area in Orlando, FL, created to protect NBA players from the COVID-19 pandemic
- For the NBA Bubble to be isolated, modifications to the delivery of healthcare and Diagnostic Radiology services were required
- Emphasis was placed on real-time collaboration with clinicians, on-site scanning and patient specific imaging protocol modification
- An overview of the radiology associated measures, practices and modifications required for successful delivery of Diagnostic Radiology (DR) services within the NBA bubble is provided

Purpose

- To illustrate how DR services were rapidly established in the NBA Bubble and subsequently integrated with the AdventHealth (AH) Electronic Medical Record (EMR) in order to provide world-class healthcare for NBA players, family, and staff

Methods

- Two "healthcare pods" were established within the NBA Bubble, on the ESPN/Disney Campus
  - Wide World of Sports Complex (WWOS) – directly adjacent to the game and practice facilities
  - Coronado Springs Resort (CSR)
- The WWOS pod was tasked with providing immediate, point of injury conventional x-ray (XR), computed tomography (CT), and magnetic resonance imaging (MRI)
- The CSR pod included a full clinic, with XR and ultrasound (US) capabilities
- From the DR perspective, the following principles were paramount: (1) timely reporting; (2) real-time communication with NBA medical staff; (3) secure Picture Archiving and Communication System (PACS) connection; (4) immediate access to imaging for both the interpreting radiologist and NBA medical staff; (5) Exam protocolling, interpretation and dictation by experienced, fellowship-trained, sub-specialist radiologists

Figure 1: Photograph from the CSR Healthcare Pod during the NBA Bubble. Image of converted resort space to patient care room with examination table.

Methods (Continued)

- A preexisting centralized NBA EMR with external sources, which allows the NBA to conduct player health and safety reviews[1], was updated with all services provided by AH while in the NBA Bubble
  - Medical staff were responsible for entering diagnoses/injuries sustained into the NBA EMR based on specific standardized options including body region, body part, body site, laterality, and injury type[1]
- AdventHealth Information Technology (AIT) was charged with connecting the AH EMR/PACS with the NBA EMR/PACS via a gateway with cloud capabilities to ensure team medical staff had immediate access to all diagnostic imaging performed. In order to accomplish this task, the following measures and procedures were employed:
  - AIT established a unique EMR within the AH System for anyone requiring imaging including players, staff and family
  - Imaging orders were placed in the AH EMR and once imaging studies were completed, they were simultaneously uploaded to AH PACS and the NBA PACS, and automatically linked to the patients MRN
  - An AdventHealth NBA liaison coordinated all exams and communications, alerted imaging staff and radiologists of newly ordered/pending exams, and ensured all reports were received by team clinicians and uploaded to the NBA EMR
- Completed exams were filtered into a dedicated NBA worklist within AH PACS, from which a contingent of selected, seasoned, subspecialty-trained AH radiologists interpreted the cases
  - Interpretation was performed off-site and AH Radiologists were made available around the clock throughout the duration of the NBA Bubble
  - Cases were dictated in PowerScribe and automatically reported in the AH and NBA EMR
  - All CT and MRI exams were provided with real-time monitoring services from fellowship-trained radiology subspecialists to allow for instantaneous protocol modification and review of image quality
- All MRI and CT results, and most XR results, were communicated in real-time to NBA physicians via phone discussion prior to releasing final reports. Those XR reports not verbally communicated were for baseline exams before players left the Bubble, but reports were available immediately upon interpretation.

Results

- A total of 360 Diagnostic Radiology exams were performed within the NBA Bubble
  - By subspecialty, 296 musculoskeletal (82%), 39 body (11%), and 25 neuroradiology (7%) exams were performed
  - 280 exams (78%) were directly communicated in real-time with a clinician, which was documented within radiology report
  - 43 exams (13%) required protocol modification including 34 MRI, 1 CT, 5 XR, and 3 US

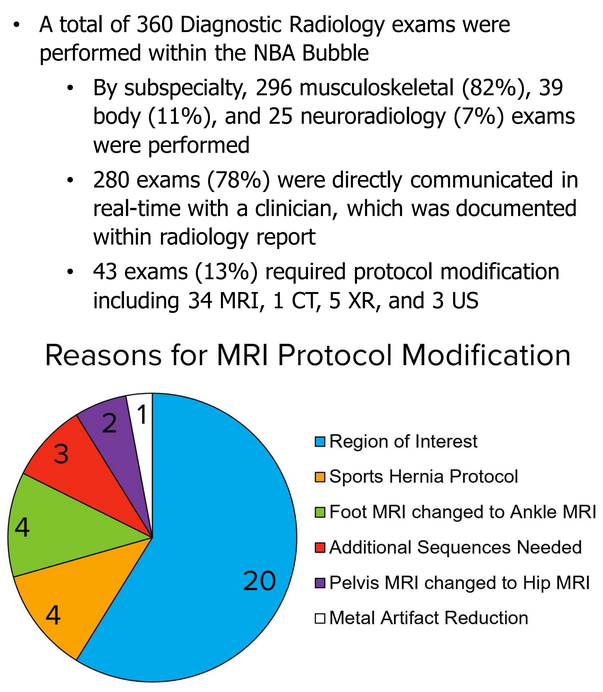

Figure 2: A total of 34 MRI exams required protocol modification. Most of the modifications required were related to the region of interest or changing the primary anatomy of interest.

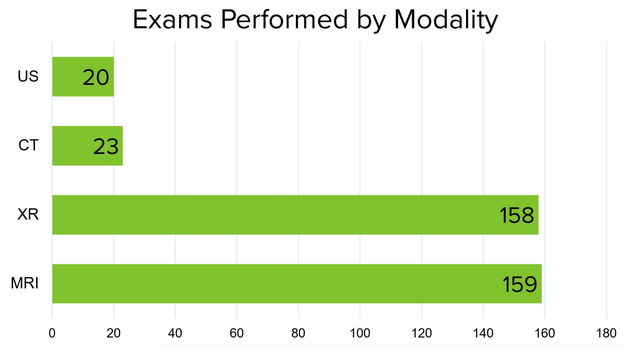

Figure 3: MRI and X-Ray accounted for over 300 of the total 360 completed exams during the NBA Bubble (July to October 2020).

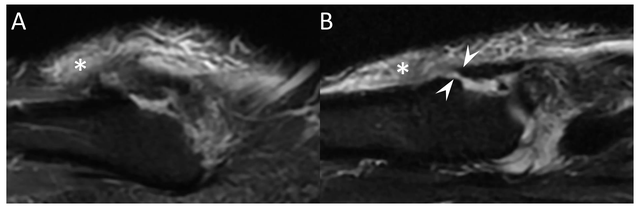

Figure 4: Acute foot pain in a professional basketball player. MRI Sagittal STIR (***A***) image of the 5th TMT joint only demonstrates subcutaneous edema (*asterisk*). Sequence was immediately repeated after decreasing the FOV from 180 to 140, decreasing slice thickness from 3 mm to 2 mm and using a true sagittal plane perpendicular to the joint. Repeat sagittal STIR (***B***) demonstrates a full thickness tear of the fifth dorsal TMT ligament (*arrowheads*) with 1 mm retraction and subcutaneous edema (*asterisk*).

Discussion

- The NBA Bubble presented the unique challenge of providing streamlined, world-class DR services aimed at meeting the needs of those who participate in the highest level of athletic competition within a short time frame
- Provision of DR services within the NBA Bubble underscored the benefits of real-time protocol modification and timely communication to provide premier care to their patients
- Further studies pertaining to the implementation of similar practices used by AH Radiology in the NBA Bubble to general medical practice may prove useful in evaluating their impacts on patient satisfaction and potential improved diagnostic accuracy with radiologist/clinician collaboration

Figure 5: An on-site provider at the WWOS during an NBA game.

Conclusion

- The implementation of a unique conglomerate of radiology-based services within the NBA Bubble was important to ensure dynamic, expeditious, and accurate medical diagnoses
- Review of these implemented practices by other healthcare professionals and administrators could prove beneficial for standard medical practice and unique situations in the future

Contact Information

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