

Virtual Reality Applications in Global Interventional Radiology Education

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Learning Objectives

To implement a virtual reality curriculum suitable for interventional radiology (IR) training in a resource-limited setting.

Background

Expansion of IR on the African continent has been limited due to sparse training opportunities. In 2018, our team established a teaching program consisting of rotating North American (NA) IR faculty who travel to the largest tertiary hospital in East Africa to provide training [1]. However, there remains great need for additional training opportunities and support when teaching teams are not present, especially during the current coronavirus pandemic.

Virtual reality (VR) offers an immersive method of both learning procedures and practicing procedures, and has been used extensively in surgical training settings [2]. The purpose of this project (in-progress) is two-pronged: 1) to create a library of IR procedures viewable on immersive, VR technology, and 2) to build a platform by which experienced faculty can provide remote support to live procedures occurring at the East African institution, via VR.

Clinical Findings / Procedure Details

Following patient consent, IR house staff and faculty film common IR cases at a large academic institution using a GoPro Hero 8 (GoPro Inc., San Mateo, CA, USA) or InstaOne X (Insta360, Irvine, CA, USA) mounted to their heads to offer first-person perspective. Teaching videos are processed and uploaded to a secure sharing network (Box Inc, Redwood City, CA, USA) and made viewable on Oculus Quest VR Headsets (Facebook Inc., Menlo Park, CA, USA). Trainees in remote locations view the videos on VR headsets. For this preliminary study, qualitative feedback was gathered following video exposure. Future work will quantify educational impact, procedural efficiency, and expand on remote support to live cases.

Conclusion and Teaching Points

Utilization of VR can provide immersive learning experiences in resource-limited settings. Further work involves continued user-testing.

[1] Laage Gaupp FM, Solomon N, Rukundo I, Naif AA, Mbuguje EM, Gonchigar A, Xing M, Prologo JD, Silih DD, Minja FJ. Tanzania IR Initiative: Training the First Generation of Interventional Radiologists. *J Vasc Interv Radiol.* 2019 Dec;30(12); [2] Augustine EM, Kahana M. Effect of procedure simulation workshops on resident procedural confidence and competence. *J Grad Med Educ.* 2012 Dec;4(4):479-85

Figure 1. Current pilot workflow.

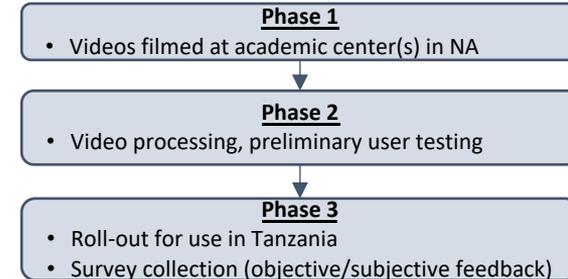


Figure 2. Set-up of VR videos. A) Trainees view videos via Oculus Quest headsets. B) and C) Videos offer 360 degree viewing of IR suites and procedures.

