RAD-AID: Fostering Opportunities to Impact Global Health with Technology

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Since RAD-AID was founded in 2008, the organization's vision has consistently focused on interdisciplinary approaches to increasing and improving radiology in low-resource communities around the world.

Indeed, RAD-AID builds radiology capabilities by assembling and integrating the perspectives of diverse radiology professionals such as radiologists, technologists, sonographers, residents, nuclear medicine imagers, nurses, informatics/information technology (IT) specialists, medical physicists, radiology administrators, and more.

In this debut of Global Health Imaging, we would like to focus on how we are leveraging artificial intelligence (AI) and other technology advances to improve global health outcomes through medical imaging.

AI and Medical Imaging

Radiology is never static; the specialty continues to grow and evolve with new technologies and scientific advances. One high-profile example of such advances is AI, which radiology is making ever-increasing use of to build software algorithms to assist clinicians in making health-care decisions.

Initially, AI's arrival on the landscape of medical imaging was perceived by many radiology professionals as a threat.[1] It is becoming increasingly clear, however, that AI is serving more as an aid to medical imaging work rather than as a replacement for personnel. Medical imagers who understand this are in position to manage implementation of AI solutions that can dramatically improve health care.[2,3,4]

Where data privacy and medical device regulations have advanced frameworks, AI implementation will encounter a different set of steps compared to low-resource contexts where data privacy and medical device regulations are still in the early stages of formulation. Through its Teach-Try-Use model for AI deployment, RAD-AID is continuing to focus its efforts on ensuring that protecting patients, empowering health workers, and safeguarding privacy, are at the forefront of ethical priorities in the implementation of AI in radiology.[5]

Remote Education

Other innovations include the use of advanced simulators that enable radiologists and technologists to practice real-time medical imaging procedures; RAD-AID is leveraging simulators particularly for interventional radiology education, where they can give trainees hands-on practice in angiographic procedures ahead of contact with patients. This kind of education can even be provided remotely through video-conference platforms to help provide low-resource regions with new avenues for skill development.

RAD-AID is using remote technology in teaching and case-based consultations. One example: the organization is developing a tele-ultrasound program, whereby the student is physically present with the patient while their teacher, consultant, or supervisor provides on-screen instruction from another location in real time. RAD-AID plans to apply the tele-ultrasound educational model to general body imaging, pediatrics, and midwifery/skilled birth attendant education.

RAD-AID is also working with many picture archiving and communication system (PACS) vendors to acquire and implement PACS and data-storage capabilities in low-resource institutions through the RAD-AID Friendship Cloud. The organization then provides a real-time,

active platform for consultation and teaching, including remote radiology residency training on real cases.[6,7] The field of "implementation science" plays a major role in making it possible to deploy technology to develop strong educational impact.[3,8,9]

Finally, technology is changing how global health specialists analyze health care disparities and resource allocation. RAD-AID, for example, is leveraging a geographic information systems (GIS) program to analyze health outcomes, economic scarcity, infrastructure, topography, and other data by fusing maps to produce advanced visualization of healthcare shortages and deficiencies. Geographic information systems can help inform the design of solutions to reach more people in need. Indeed, RAD-AID is using GIS to visualize geographic and population-based distribution of radiology resources to determine how they can be more equitably utilized across populations and regions.[10]

In conclusion, this exciting spectrum of technology innovation comprises just one aspect of the multidisciplinary work of RAD-AID, whose aim and goals are to present medical imaging professionals with balanced and integrated strategies to help address healthcare disparities around the world.

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