A Nonprofit Public Service

RAD-AID.org

Radiology serving the world




10th RAD-AID INTERNATIONAL ANNIVERSARY 2008-2018




2017-2018 ANNUAL REPORT

The Need for RAD-AID

Babies and mothers need **ultrasound** for safe delivery.

Cancer patients need **CT/MRI** for staging and treatment.

Trauma and infection victims need **x-ray, ultrasound, and CT** to address injuries and outbreaks.

Heart and stroke victims need **CT, angiography, and ultrasound** for diagnosis and treatment.

OVER HALF THE WORLD LACKS RADIOLOGY

(Source: World Health Organization)

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Radiology serving the world

Countries

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Letter from Chief Executive Officer

Dear RAD-AID Friends and Supporters,

We are delighted to bring you this 2018 report on RAD-AID's progress. When RAD-AID began in 2008, we established one simple mission: to increase and improve radiology for medically underserved countries and communities of the world. Starting off with just a few initial contributors and volunteers, we have grown to become an organization of over 9000 volunteers (versus 6000 last year), serving 40 million people in more than 27 countries, affiliated with the United Nations and World Health Organization, and leading a network of 61 university-based academic medical center chapters. RAD-AID's work has contributed more than $5 million in radiology capacity development. In 2018, we celebrate **RAD-AID's tenth birthday!**

The growth has been thrilling and humbling, as we encounter more communities in need and more people we want to help. RAD-AID's growth has come from us staying focused on our singular mission and empowering the creative energies of radiology professionals around the world to improve global health. RAD-AID does not have all the answers for health care disparity, but we work hard to find innovative solutions for medical imaging. We create a platform of resources and methods for our volunteers and partners to flexibly use in their service to the world.

We hope to continue the advancement of global health by bringing critical radiology services and imaging technologies to regions of great need. We approach the problem of radiology scarcity with a methodical strategy that emphasizes data driven analysis so that we can first identify the best way that radiology can positively impact the health and well-being of a community. That method becomes the core for how thousands of RAD-AID volunteers can then channel their own creativity and vision into making a difference in impoverished regions. We emphasize the power of education to build local health care capacity throughout the globe with sustainability as the underpinning goal.

We thank you for your interest in RAD-AID and for your support of our efforts. We invite you to join our international teams hard at work to bring vital radiology to poor and underserved communities.

Sincerely,

Daniel J. Mollura, MD
President and CEO
RAD-AID International

RAD-AID Leadership

Officers and Management Team

Daniel J. Mollura, President and Chief Executive Officer
Melissa Culp, Vice President and Chief Operating Officer

(Alphabetical)
Gillian Battino, Director, RAD-AID Latin America
Issack Boru, Program Manager, RAD-AID Country Reports Program
Krystal Buchanan, Program Manager, RAD-AID Jamaica
Michael Chervonski, Program Manager, RAD-AID Haiti, Radiology Residency Education
Christopher Chornay, Manager, RAD-AID Conference
Farouk Dako, Program Manager, RAD-AID Nigeria
Elise Desperito, Director, RAD-AID Medical Student Education Development
Patricia DuCharme, Director, RAD-AID Nursing
Mai Elezaby, Director, RAD-AID Learning Center
Farhad Ebrahim, Director, RAD-AID Disaster Response; Radiologist, RAD-AID South Africa
Ryan England, Manager, RAD-AID Airship Flight Operations
Adriana Faulkner, Program Manager, RAD-AID Cape Verde
Kenedy Foryoung, Program Manager, RAD-AID Cameroon
Lauren Fuller, Director, RAD-AID Chapters Network
Dale Gerus, Operations Director, RAD-AID Informatics
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Carrie Hayes, Director, RAD-AID Ultrasound
Andew Kesselman, Director, RAD-AID Interventional Radiology
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Vikki Mango, Director, RAD-AID Kenya
Miriam Mikhail, RAD-AID Liason to World Health Organization
David Mobley, Director, RAD-AID Liberia
Natasha Monchil, Program Manager, RAD-AID Haiti, Technologist Education
Kristin Pahl, Program Manager, RAD-AID Liberia
Shilpen Patel, Director, RAD-AID Radiation Oncology
Olive Peart, Associate Director, RAD-AID India
Jenni Pierce, Director, RAD-AID Applachia-USA
Debra J. Poelhuis, Associate Director, RAD-AID India
Erica Pollack, Director, RAD-AID Breast Imaging
Kara-Lee Pool, Program Manager, RAD-AID South Africa
Seth Quansah, Co-Director, RAD-AID Ghana
Zach Rajput, Program Manager, RAD-AID Guatemala
Carlin Ridpath, Program Manager, RAD-AID Nepal
Michael Reiter, Director, RAD-AID Radiology-Readiness Program, RAD-AID Pediatrics
Kaitlyn Ryan, Associate Program Manager, RAD-AID Radiation Oncology
Matthew Schwartz, Associate Program Manager, RAD-AID Nepal
Alan Schweitzer, Technical Director, RAD-AID Informatics
Elizabeth Sheehan, Director, RAD-AID Finance
Luyao Shen, Program Manager, RAD-AID China
Robin Sobolewski, Director, RAD-AID Cape Verde
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Gary Soroosh, Director, RAD-AID Conference
Chip Swett, Co-Director, RAD-AID Ghana
Tiffani Walker, Director, RAD-AID Technologist Program
Gary Whitlock, Associate Program Manager, RAD-AID Tanzania
Chad Wilcox, Program Manager, RAD-AID Liberia
Andrew Woodward, Program Manager, RAD-AID Malawi
Marianna Zagurovskaya, Program Manager, RAD-AID Kazakhstan

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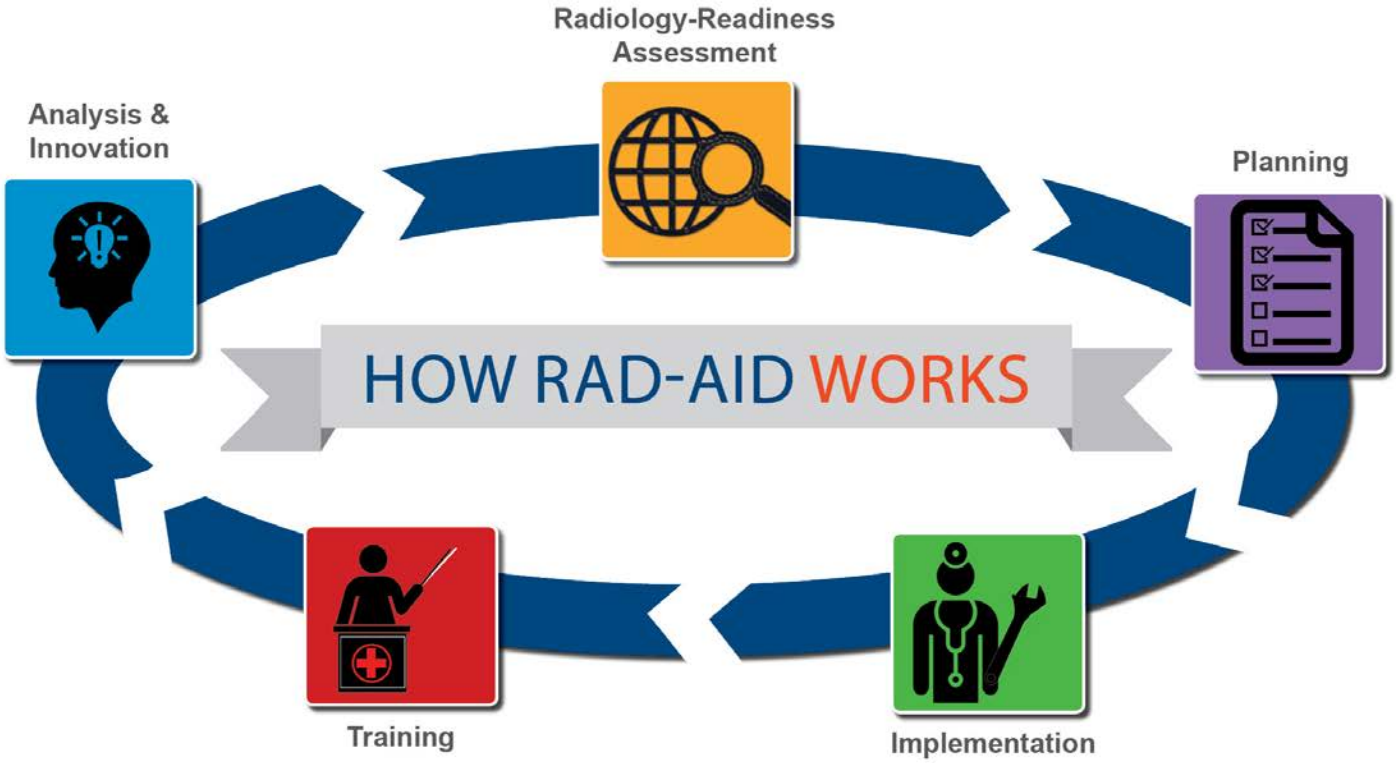
Paula Sanderson, Principal, Digital Marketing Consultant, WSI Digital Marketing of Connecticut
Liana Watson, Former Executive Vice President, American Society of Radiologic Technologists

How RAD-AID Works



RAD-AID uses a simple method for analyzing, planning and implementing projects. The first step is **Radiology-Readiness**, which is RAD-AID's trademarked data collection and analysis tool, so that we can optimize every radiology project for the specific needs, infrastructure constraints, and health care system attributes of a region, community or facility.

Once we conduct the Radiology-Readiness Assessment, we plan the project based on that data. Third, we **implement** the project based on the plan whether it means installing hardware, configuring workstations, organizing training, writing research, or designing a new technology. Fourth, education is a central part of everything we do, and we hold **training** sessions so that RAD-AID can train in-country partners to use and maintain the implemented program. More importantly, our teams also receive training and education from our in-country partners so that we can learn from them about clinical and cultural factors that will influence the success of our collaborative program.

Lastly, we work with our in-country partners to **analyze** the results of the program, to find what worked and what did not work. In this way, we identify new challenges to solve and find new resources to strengthen the program. Then, we return to step one and repeat our Radiology-Readiness assessment so that we can see how our project had positive impact and what gaps need to be addressed. This circular iteration of data, analysis, planning, self-correction and new data collection keeps RAD-AID moving forward.

This approach is efficient and scalable because we apply it to all our programs. This approach is flexible because it adapts to local cultural and clinical conditions so that each program is uniquely suited to the country and specific health goals.

RAD-AID Central and South America, & Caribbean

Haiti

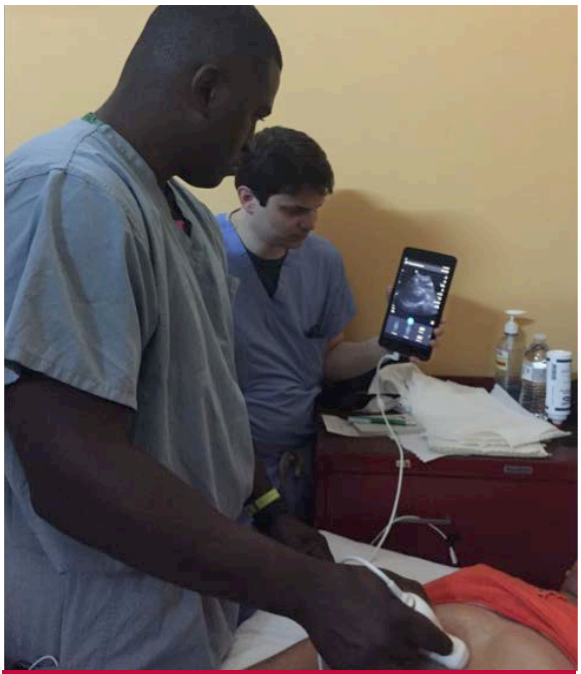
RAD-AID has worked in Haiti since the earthquake of 2010. Over the last eight years of RAD-AID's radiology capacity-building in Haiti, our teams have supported University Hospital of Haiti in Port-au-Prince to improve educational resources available for radiology residents as the future medical imaging workforce of the country. RAD-AID conducts technologist training programs in Haiti, such as Quisqueya University and other Haitian medical institutions, including technologist education in radiography, ultrasound, and mammography. In 2016, RAD-AID donated two CT scanners to Haiti in Caracol and Gonaïves, which includes personnel-training and equipment-planning in 2018-2020, with support from Philips Foundation.

RAD-AID Haiti team giving instructional session and case rounds on plain film radiographs at University Hospital of Haiti in Port-au-Prince in 2015.

Nicaragua

The RAD-AID Nicaragua program brings vital radiology support and training to rural and urban regions of the country, including general ultrasound, women's health, and pediatrics. RAD-AID implemented Picture Archiving and Communication Systems (PACS) for digital imaging and storage at four Nicaraguan hospitals in 2016 with support from Merge Healthcare (an IBM company). This means improving health care for hospitals serving 3 million people and enabling the first-ever computer-based medical systems in Nicaragua. RAD-AID gave funding support to local Nicaraguan radiologists for providing ~750 free ultrasound exams to patients in 2017.

Ultrasound education in Nicaragua, with participation from Georgetown University, Henry Ford Hospital, University of Iowa, and University of Wisconsin RAD-AID Chapters.



Ultrasound outreach and radiology education support for Nicaragua.

RAD-AID ultrasound education in Guyana, and planning Guyana's first radiology residency program, which launched in 2017.

Guyana

The RAD-AID Guyana Program began in 2013 in partnership with the World Health Organization's Pan American Health Organization (WHO/PAHO). In 2016, RAD-AID donated 2 CT scanners to Guyana at Bartica and New Amsterdam Hospitals, with support from Philips Foundation, and partnered with Northwell Hofstra School of Medicine's RAD-AID Chapter to establish the first radiology residency in Guyana's Georgetown Public Hospital.

RAD-AID and Philips' donation of CT scanner at New Amsterdam Hospital in Guyana for RAD-AID's CT and radiology residency training initiative.

First class of Guyana's radiology residents at 2017 RAD-AID Conference.

Jamaica

RAD-AID Jamaica launched operations in 2016 under the leadership of Dr. Krystal Buchanan of the Yale RAD-AID Chapter. Project activities include multi-institutional Radiology-Readiness Assessments, information technologies assessment, and educational training for radiology residents, technologists, and local health personnel. RAD-AID currently supports radiology development at Kingston Public Hospital, University of the West Indies and Cornwall Regional Hospital.

RAD-AID's mission is to increase and improve radiology resources in the developing and impoverished countries of the world.

Photo of ultrasound training in Jamaica. Renee McDermott, Ultrasound Technologist from Yale RAD-AID Chapter, teaching radiology residents at the University of the West Indies in Kingston and St. Andrew, Jamaica.

Kingston Public Hospital, site of RAD-AID Jamaica team visit for Radiology-Readiness assessment, teaching and equipment support (Source: Yale RAD-AID Chapter)

RAD-AID Guatemala team at INCAN (led by Mallinckrodt RAD-AID Chapter) in Guatemala City, 2016, assisting radiology training and health information technology development for cancer diagnostics and treatment.

Guatemala

RAD-AID Guatemala launched activities in 2016 at Instituto de Cancerología (INCAN) under the leadership of the RAD-AID Mallinckrodt Chapter. RAD-AID's Radiology-Readiness assessment at INCAN highlighted the need for ultrasound optimization to help cancer patients in Guatemala. RAD-AID expanded radiology education in Guatemala and implemented health information technologies for CT, mammography, and ultrasound. In partnership with Merge Healthcare (an IBM company), RAD-AID donated and implemented PACS at INCAN in October 2016, enabling us to spearhead the adoption of digital health capabilities in Guatemala.

RAD-AID visiting CerviCusco in Peru for cancer outreach, nursing and radiology support, 2017

Peru

RAD-AID is working in CerviCusco, after having completed a Radiology-Readiness Assessment in mid-2016. Plans are underway for evaluating how radiology can best support and advance cancer screening, diagnosis and treatment in Peru.

RAD-AID Africa

RAD-AID Ethiopia team at Black Lion Hospital, Addis Ababa, in November of 2017.

Ethiopia

RAD-AID's program in Ethiopia was launched in 2015. RAD-AID provides essential MRI, CT, ultrasound and radiography training to Black Lion Hospital's residents and staff in Addis Ababa. RAD-AID implemented PACS at Black Lion Hospital in early 2018 with support from Medweb. RAD-AID works closely with Children's Hospital of Philadelphia (CHOP), Emory University, and NYP/Weill Cornell Medical Center (all of whom have RAD-AID chapters) for educational training of radiologists and technologists at Black Lion Hospital. RAD-AID is expanding these outreach efforts to St. Paul's Hospital in Addis Ababa and ultrasound education in Gondar, Ethiopia.

Ghana

RAD-AID's program in Ghana began at Korle Bu Teaching Hospital (KBTH) in 2012 and has grown to include installation of PACS in 2013, upgrade of PACS in 2016, as well as RAD-AID's educational programs at Korle Bu in imaging informatics, interventional radiology, pediatric radiology, nuclear medicine, ultrasound and breast imaging.

RAD-AID team for supporting radiology development in Ghana, August, 2017.

RAD-AID supporting interventional radiology in Ghana, September, 2017.

Kenya

As of 2015, Kenya has 1-2 advanced MRI and CT scanners per 1 million people, just a fraction of the 25-30 CT and MRI scanners per one million people in Europe and the US. RAD-AID's program in Kenya began in 2013, with efforts to bolster the education system for radiology professionals, and uncovered large disparities in cancer treatment. In 2016, RAD-AID launched a Cancer Imaging and Treatment initiative to link radiology with radiation oncology at Kenyatta National Hospital. In 2018, RAD-AID added more resources to support breast cancer screening and breast imaging clinical education in Kenya.

RAD-AID Kenya team, teaching radiologic techniques for cancer treatment planning at Kenyatta National Hospital, 2016.

Tanzania

Tanzania has 30 radiologists for the country's population of 49 million people. RAD-AID's program in Tanzania began in 2015 to help address severe radiology personnel shortages. Our program sites in Tanzania include Arusha, Moshi, Mwanza, and Dar es Salaam. RAD-AID is assisting the development of advanced cross sectional imaging with training of radiologists, sonographers, radiation therapists, and radiologic technologists. RAD-AID is partnered with the Society of Nuclear Medicine and Molecular Imaging (SNMMI) since 2016 for assisting Aga Khan Health Services. In 2017-2018, RAD-AID coordinated inter-institutional partnerships in Tanzania for nursing and radiology residency rotations.

RAD-AID Tanzania team teaching in Arusha.

RAD-AID Tanzania team teaching in Moshi (2017), developing partnered radiology training of radiology residents and medical imaging professionals in Arusha, Dar es Salaam, Mwanza, and Moshi.

Malawi

The RAD-AID Malawi program was launched by the RAD-AID Chapter at University of North Carolina, with our Radiology-Readiness assessment data showing a significant need for training radiologists, technologists and sonographers. Malawi has fewer than five radiologists serving over 18 million people with no in-country training programs to boost capacity. Therefore, the RAD-AID Malawi program supports training of medical imaging professionals and gives scholarship support for physicians in need of training. RAD-AID currently teaches technologists and MDs at Malawi College of Health Sciences, Kamuzu Central Hospital, and Partners in Hope, located in Lilongwe.

RAD-AID began in 2008 to answer this need for more radiology and imaging technology in the resource-limited regions and communities of the world.

Teaching radiologic techniques and safety in Malawi (Source: University of North Carolina RAD-AID Chapter) at Radiography Programme at Malawi College of Health Science

Department photo (2013) at Malawi College of Health Science (Source: University of North Carolina RAD-AID Chapter)

Cape Verde

The RAD-AID Cape Verde Program began in 2013. Cape Verde is a nation of 10 islands having 500,000 people off the coast of West Africa. Having little or no local educational infrastructure for radiology professionals, RAD-AID teams focus on ultrasound and radiography at imaging and primary care centers, including São Filipe Regional Hospital and Mosteiros Hospital. Efforts in 2018-2019 aim to provide PACS, optimize two CT scanners, give ultrasound training, and support mammography services.

RAD-AID has numerous programs throughout the world. We welcome you to participate!

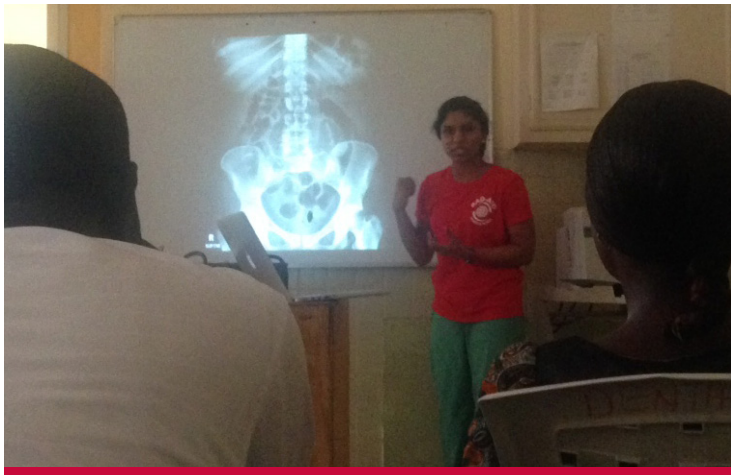
Reviewing x-ray radiographic image interpretation, RAD-AID Cape Verde.

RAD-AID Nigeria team teaching CT-guided biopsy techniques at Lagos University Teaching Hospital (LUTH) in 2017.

Nigeria

Nigeria's population of 186 million people has an estimated 250-300 radiologists, fiftyfold fewer than the US per capita, with large gaps in radiology equipment and health IT resources. Since 2016, RAD-AID Nigeria has supported the education of radiologists and technologists, with vital contributions from University of Maryland and Temple University RAD-AID Chapters. RAD-AID has worked at Lagos University Teaching Hospital (LUTH) and aims to include University College Hospital (UCH) in 2018.

RAD-AID Nigeria team at Lagos University Teaching Hospital in Lago, Nigeria (2016)



RAD-AID Liberia: providing training to radiologists and technologists via near-continuous rotation of RAD-AID teams for on-site education of local staff and national curriculum development.

Educational demonstration of ultrasound by RAD-AID Team in Liberia (2017).

Liberia

The RAD-AID Liberia program started in 2009 at JFK Memorial Hospital, which we then expanded to also include Redemption, ELWA, Phebe, and JFD-Tappita Hospitals in 2017. Through a robust partnership with Mount Sinai Medical Center (NY) and the World Bank, RAD-AID is helping to build the Liberian health care workforce through dedicated training of radiology professionals in our partner hospitals. These efforts include specific support for radiography, CT, interventional radiology procedures, ultrasound and radiology residency curriculum development.

RAD-AID South Africa team, conducting interviews in Cape Town and Western Cape medical institutions in 2016 for strengthening radiology development and health service delivery.

South Africa

RAD-AID's program in South Africa launched in 2016 in conducting Radiology-Readiness Assessments at multiple health institutions in Western Cape, including urban and rural settings. Ongoing efforts include radiology training, information technologies and mobile health outreach strategies. In 2017-2018, RAD-AID initiated Geographic Information Systems (GIS) research for advanced mapping of health care disparities in parallel with infrastructure features (roads, airports, railroads, etc.,) in the Limpopo region. GIS enables RAD-AID to propose specific radiology and health care solutions that may help address essential shortages of medical services and overcome transportation gaps with aircraft and automotive mobile health outreach.

RAD-AID Europe and Asia

Teaching session in Nepal during RAD-AID earthquake response team in 2015 (Source: University of Wisconsin RAD-AID)

Nepal

The RAD-AID Nepal program began in 2014 at Tribhuvan University Teaching Hospital in Kathmandu, and expanded via RAD-AID's Disaster Response team in the aftermath of Nepal's earthquake in 2015. In 2016, RAD-AID donated and implemented PACS at three institutions with supportive radiology education running in parallel. Current efforts include strengthening links between urban centers and rural periphery.

Babies born in Kathmandu, Nepal during RAD-AID visit of 2014

Line of patients outside PGIMER Chandigarh RAD-AID mobile women's health clinic, Asha Jyoti ("Ray of Hope").

India

RAD-AID's work in India began in 2010 with the establishment of Asha Jyoti ("Ray of Hope" in local Punjabi language) in the innovation of a specially designed mobile women's health clinic for osteoporosis, breast cancer and cervical cancer screening of marginalized women in Northern India. Surpassing the targets set by RAD-AID and the partner hospital (PGIMER Chandigarh), **Asha Jyoti has now delivered care to more than 19,500** women, and has established a model for mobile screening and treatment referral in India. Philips Healthcare has provided generous support for Asha Jyoti. RAD-AID India won an award from the Clinton Global Initiative's Champions of Action program in 2012 and received the Healing Asia Award in 2017 from Friends Without a Border.

Patients waiting for PGIMER Chandigarh RAD-AID mobile women's health clinic, Asha Jyoti ("Ray of Hope") in Northern India

China

RAD-AID's China program began in 2010 with Radiology-Readiness assessments in east and west China. Modernized infrastructure in China gave opportunity for educational collaborations, mainly located in western regions of China, covering image quality, diagnostic techniques, and radiologic safety. In 2014, with support from ASRT Foundation, the RAD-AID China program intensified its focus on large populations of cancer patients needing interdisciplinary care, such as radiation therapy, nursing, and oncology. In 2016, the ASRT and RAD-AID strengthened the China Cancer Care Initiative at Tumor Hospital in Yinchuan, China, by carrying out an inter-institutional regional training program for radiation therapy and oncology specialists. Going forward, RAD-AID is improving the integration between diagnostic imaging, radiologic cancer staging and radiation oncology planning.

RAD-AID China Cancer Care Initiative, with radiation oncology and therapists, in collaboration with ASRT Foundation; Yinchuan, China in 2015.

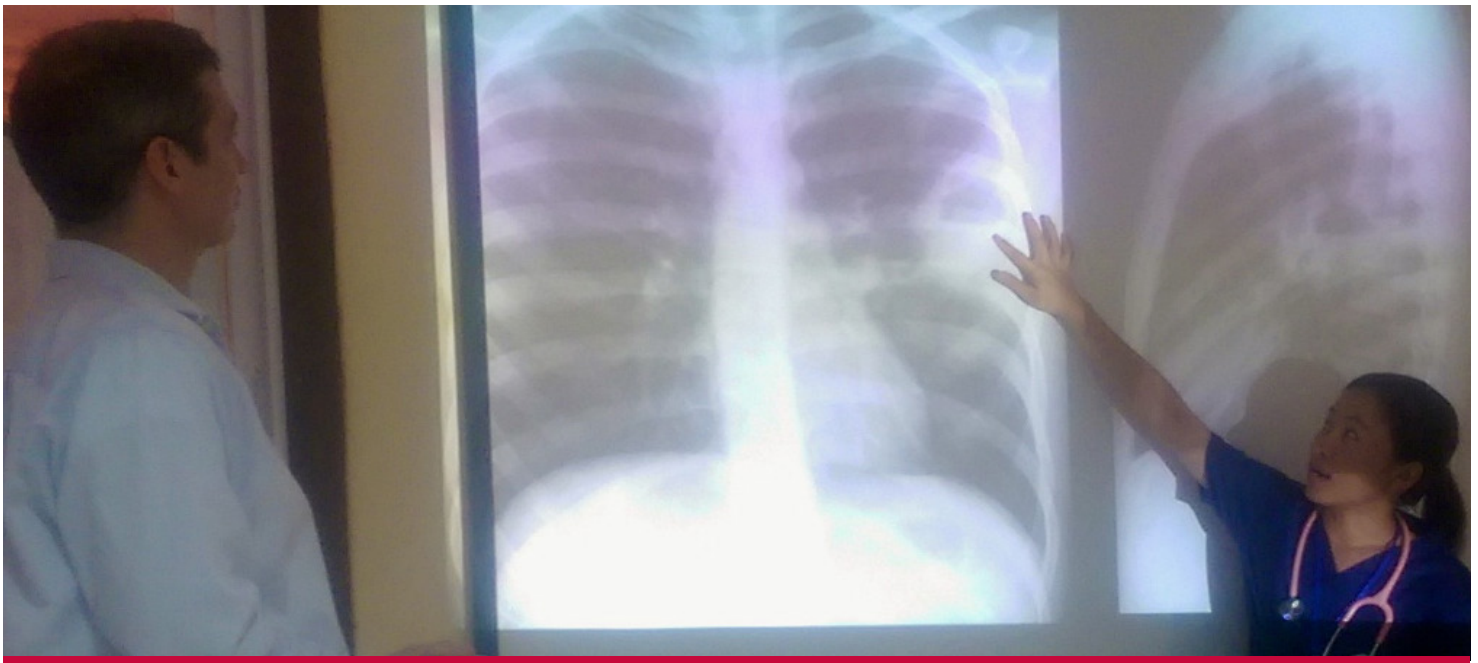
RAD-AID has grown to include more than 9000 volunteers from 100 countries, 61 university-based chapter organizations, on-site programs in 27 countries, and an annual conference on global health radiology.

RAD-AID Bhutan Program for modernizing imaging infrastructure and analyzing clinical use of radiology for broad-based health care.

Bhutan

The RAD-AID Bhutan program began in 2014 in collaboration with faculty from George Washington University Medical Center and the World Health Organization. Bhutan has only one CT scanner serving a population of 750,000 scattered by large distances of mountainous terrain. RAD-AID sponsored Radiology-Readiness assessments in Bhutan in 2015 and 2016, showing large gaps in imaging technology and substantial needs for CT, ultrasound and radiography education. Ongoing efforts in Bhutan are focused on educational efforts and modernization of imaging infrastructure.

According to the World Health Organization (WHO), approximately 3-4 billion people are at-risk for widespread losses and deaths that can be avoided or treated, if radiology were available.



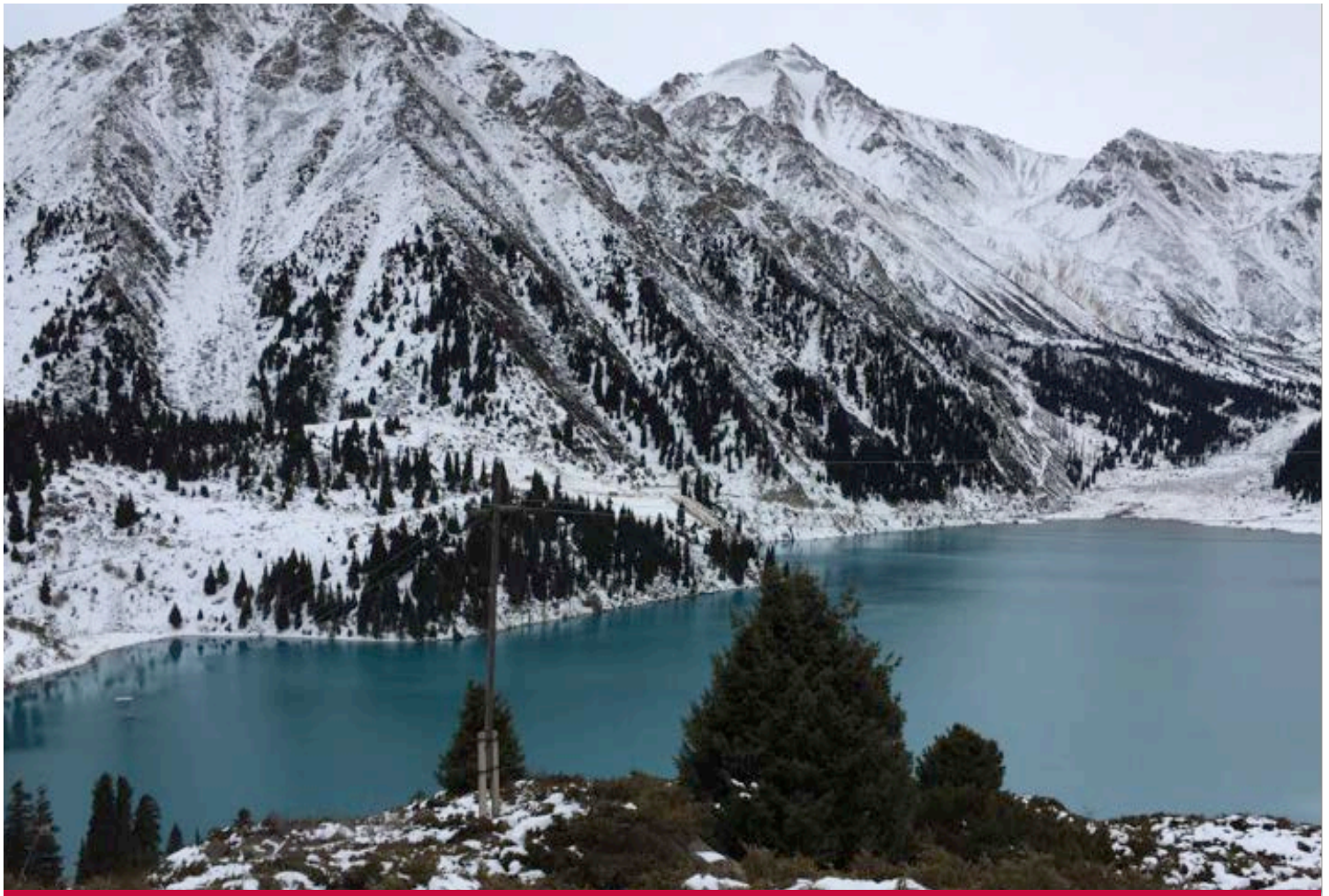
RAD-AID Laos program, teaching pediatric radiographic techniques and interpretation at Lao Friends Hospital for Children (LFHC) in 2015.

Laos

The RAD-AID Laos program assists the development of new radiology for Lao Friends Hospital for Children (LFHC), which opened in 2015. RAD-AID sends regular teams to train and support the radiology department in the hospital, particularly for ultrasound and x-ray radiography services that never existed before in the hospital. In October 2015, RAD-AID implemented the first PACS system in the country at LFHC, providing digital imaging and radiology exam storage for the hospital. RAD-AID donated a new ultrasound unit to LFHC, and advanced the radiology protocols and ordering systems for the hospital. For these accomplishments, RAD-AID won the Healing Asia Award from LFHC's NY-based foundation, Friends Without A Border in April 2017. In 2018, RAD-AID expanded PACS and initiated new CT support for LFHC and the adjacent government hospital, Luang Prabang Provincial Hospital (LPPH).

RAD-AID providing neonatal ultrasound training at Lao Friends Hospital for Children (LFHC) in August, 2017.

RAD-AID Laos program, teaching ultrasound techniques: (source: RAD-AID/ASRT Foundation Technologist Fellowship recipient)



RAD-AID Kazakhstan, radiology capacity building, 2016-present.

Kazakhstan

RAD-AID launched a program in Kazakhstan in 2016 at Kazakh Research Institute of Oncology & Radiology (KRIOR) in Almaty, Kazakhstan. RAD-AID's efforts in Kazakhstan are focusing on transitioning from post-Soviet training models for radiology residents, and increasing educational resources for CT, MRI, and x-ray radiography.

A cornerstone of RAD-AID's strategy is the Radiology-Readiness tool, which RAD-AID developed and trademarked in 2009, and was endorsed by the World Health Organization in 2011.

RAD-AID Kazakhstan: teaching radiology techniques, protocols and image interpretation in Almaty, Kazakhstan.

Vietnam

RAD-AID launched a program in Vietnam in 2017 via support from the RAD-AID Mayo-Jacksonville chapter. The program is currently based at Da Nang General Hospital, which serves a population of nearly 1 million people in Da Nang, Vietnam. RAD-AID goals include radiology education for interventional radiology and neuroradiology, as well as support for PACS and health informatics.

RAD-AID team in Vietnam teaching neuroradiology, 2017.

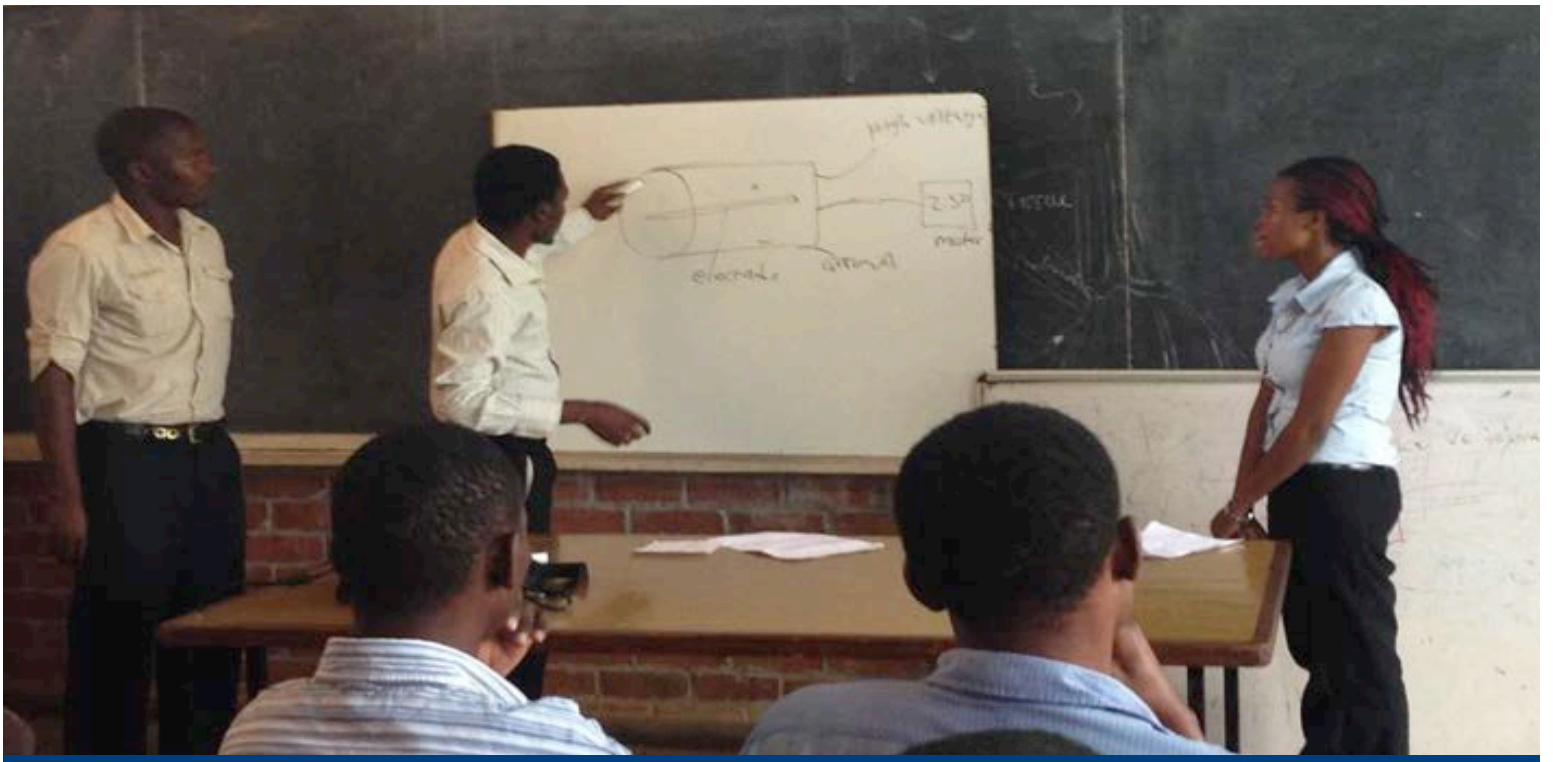
RAD-AID Vietnam team is focusing on interventional radiology, neuroradiology and imaging informatics

Albania

The RAD-AID Albania program launched operations in November of 2017, starting with a Radiology-Readiness Assessment in Tirana, Albania. Albania currently has large gaps in diagnostic imaging and screening due to insufficient staff training and equipment. There is no national breast cancer screening mammography program in Albania. RAD-AID is working to strengthen radiology training and screening programs.

RAD-AID Albania program, working in Tirana, in November of 2017

EDUCATION



RAD-AID Malawi team teaching radiographic techniques in Lilongwe, Malawi (Source: University of North Carolina RAD-AID chapter)

Education and training constitute the cornerstone of RAD-AID's effort to build in-country radiology capacity for health care in medically underserved regions. RAD-AID has several key interlocking, synergistic and complementary forms of education that form a well-rounded approach:

- **On Site** in-country RAD-AID teams performing hands-on training to local personnel
- **Online learning** via the **RAD-AID Learning Center** and learning management system to provide pro bono internet-based didactic educational content
- **RAD-AID textbook, "Radiology in Global Health,"** published in 2014, now in production of its second edition which is due for publication in 2018.
- **Global Health Radiology Certificate of Proficiency** is a successful program launched by RAD-AID in 2015 providing semester based courses led by RAD-AID's Chief Operating Officer, including lectures, discussions and project mentorship. The course results in a certificate of proficiency from RAD-AID in global health radiology disciplines.
- **Medical Student Clerkship elective** in Global Health Radiology began in 2017 as the new medical student clerkship elective. Medical students with an interest in global health radiology can do a joint elective managed by RAD-AID and partner medical schools (first launched from Columbia College of Physicians and Surgeons).
- **RAD-AID Chapters Network**, now consisting of 61 US-based academic radiology institutions, receives project support, funding, and educational webinars from RAD-AID in support of radiology residents, faculty, students, and technologists to boost global health projects in underserved and international settings.

RAD-AID Haiti team teaching radiographic imaging techniques and protocols at University Hospital of Haiti, Port-au-Prince, 2015.

RAD-AID team, teaching ultrasound, Port-au-Prince, Haiti.

RESEARCH AND ASSESSMENT

RAD-AID Nicaragua team implementing PACS and health information technologies in 2015 after RAD-AID's Radiology-Readiness and PACS-Readiness assessments.

RAD-AID's data driven model requires robust attention to data collection, analysis, and planning. This model includes:

- Radiology-Readiness Assessments for optimizing radiology at the facility-level in planning RAD-AID programs
- Country Reports for analyzing general national health care needs and systemic features in developing countries.
- RAD-AID Conference – a unique international radiology forum (annual since 2009 and now in its 10th year, co-sponsored by the World Health Organization in Washington DC.
- PACS-Readiness: RAD-AID assessment tool dedicated to pre-assessing resources at institutions before RAD-AID installations of PACS such as existing connectivity, software licenses, servers, workstations, electrical power, and scanner compatibility.

RAD-AID builds an organizational culture that inspires creativity, drives innovation, and rewards perseverance. Always persevere.

ANNUAL RAD-AID CONFERENCE: *10 YEARS*

Annual RAD-AID Conference in main hall at World Health Organization, Pan American Health Organization (WHO/PAHO) regional headquarters in Washington DC.

Although there are numerous conferences on medical imaging and radiology for radiology professionals held throughout the year, there was never one dedicated forum for global outreach and international radiology development. To answer this need, the RAD-AID Conference was formed at Johns Hopkins in 2009 and was run on an annual basis every year since. The RAD-AID Conference has increased attendance by about 500% since the founding, now regularly attended by ~280 participants and hosted by the World Health Organization. The conference is essential for RAD-AID as a central insight and vision-formation event that sets the plans in motion for the following year. The Conference is routinely scheduled for the first Saturday in November, and coincides with the International Day of Radiology (IDoR) in early November.

RAD-AID's management team consists of three key components to bring the best talent, experience and expertise to the development of RAD-AID programs: Operational, Regional and In-Country Leaders.

INTERDISCIPLINARY INITIATIVES

Informatics & Health IT

RAD-AID implemented digital radiology, health IT and PACS in over 9 countries, and provides advanced training on medical software applications to low-resource hospitals.

Nursing

Nursing is vital for radiology such as prenatal ultrasound, emergency triage for trauma imaging, CT patient safety, and nurse-practitioners' primary care. RAD-AID integrates best-practice nurse education into radiology outreach for low-resource health care capacity building.

Interventional Radiology

RAD-AID supports interventional radiology training for fellowship programs and hospitals in Guyana, Nicaragua, Ethiopia, Ghana, Tanzania, Vietnam, Kenya, and Nigeria,

Radiation Oncology

RAD-AID has radiation oncology teams supporting cancer treatment capability in Kenya, Tanzania, and China.

Medical Physics

RAD-AID's medical physicists work in our teams to optimize radiology image quality, accuracy, and patient safety.

RAD-AID Cape Verde educational and children's outreach project.

RAD-AID is about the wholistic picture of radiology. Not just the equipment but also the people and all of the other resources that go into making it effective.

RAD-AID providing clinical training in women'shealth for nursing students from National Institute of Nursing Education, in Chandigarh, India (2017)

RAD-AID conducted multidisciplinary cancer outreach at health fair in Garhshankar, India (2017)

PARTNERSHIPS

Partnerships play an essential role in RAD-AID's efforts to form well-rounded approaches to international health and public service. RAD-AID's partnerships include a vast system of contractual and Memorandum of Understanding (MOU)-based relations with international hospitals and academic centers. Partnerships are also in place with professional societies and nonprofit organizations to implement collaborative outreach goals.

One key area of partnership is the radiologic technologist community, which comprises 35% of RAD-AID's volunteers. RAD-AID formed robust partnerships with ASRT Foundation (US-based technologists), Society and College of Radiographers (SCoR, UK-based technologists) and the Canadian Association of Medical Radiation Technologists (CAMRT). These partnerships give outreach opportunities to radiology professionals seeking to help underserved regions of low-resource countries. Moreover, by bridging these organizations through RAD-AID teams, we foster an international team spirit and mix of skills necessary for being impactful in the developing world. These partnerships with technologist organizations integrate effectively with RAD-AID's physician partner societies, including ACR, RSNA, and ISR.

In 2016, RAD-AID launched an MOU-based partnership with Society of Nuclear Medicine and Molecular Imaging (SNMMI) to support the Hyman-Ghesani RAD-AID SNMMI Global Health Scholarship, adding nuclear medicine radiology capacity to Tanzania by sending residents and faculty to teach and work at Aga Khan Health Services in Tanzania.

In 2017, RAD-AID launched an MOU-based partnership with Society for Imaging Informatics in Medicine (SIIM) for sending health IT specialists, implementing informatics software in low-resource medical imaging facilities, and training in-country informatics professionals on Picture Archiving and Communication System (PACS), Electronic Medical Records (EMR), Radiology Information Systems (RIS) and other IT applications.

Since 2015, RAD-AID has maintained an affiliation with the United Nations as a nongovernmental organization in official relations with the World Health Organization (WHO), through which RAD-AID supports global health and international health policy initiatives.

RAD-AID has created, coordinated, and led public-private partnerships to integrate technologies, education, innovation and health care in philanthropic service to poor and underserved regions. These efforts bring together robust sources of expertise from public and private sectors to help low-resource regions via such innovative programs as RAD-AID Asha Jyoti for mobile cancer screening in India, CT and MRI development in Africa and South America, artificial intelligence-enhanced mobile outreach in the US, and aircraft-based mobile clinics for remote locations. This range of community service

philanthropic initiatives include such collaborators as Philips, Bayer, Siemens, Hologic, IBM, Quest Diagnostics, SonoSite, Medweb, Ambra, Aperian Global, Straightline Aviation, Hybrid Enterprises, Matthews Specialty Vehicles, Lockheed Martin, and many more.

Partnerships between nonprofit organizations, the private sector, government agencies, technology companies, and health institutions constitute the cornerstone of RAD-AID's strategy to bring resources to developing countries.

RAD-AID CHAPTERS NETWORK

The RAD-AID Chapters Network launched in 2012 and gives US and Canadian academic medical centers the ability to form RAD-AID chapters approved by the Chairs of the respective radiology departments. This grass-roots horizontal approach gives residents, faculty, staff, nurses, and technologists at these centers the ability to organize their own projects and strategies while benefitting from scale, efficiencies, and funding from RAD-AID's global organization. The RAD-AID Chapters Network grew to 7 institutions in 2013, 25 chapters in 2014, 53 institutions in 2016 and 61 chapters by early 2018.

Some chapters have formed new RAD-AID programs, such as Cornell in Ethiopia, University of Virginia in Uganda, University of Maryland in South Africa, University of Wisconsin (UW) in Nicaragua and University of North Carolina in Malawi. Other chapters have provided key support to broad RAD-AID programs with rotating volunteers, such as Tufts, University of Pittsburgh, and UC Davis in RAD-AID Haiti; SUNY Downstate in RAD-AID Informatics and Ghana; UNC and UW in Nepal; University of Pennsylvania RAD-AID in Tanzania, and Columbia's chapter actively supporting RAD-AID Liberia and the RAD-AID India Women's Health program. The RAD-AID Chapters Network has the yearly Chapters Roundtable Meeting immediately following the RAD-AID Conference, as a governance forum to discuss ways to improve chapter activities and expand opportunities for project development.

RAD-AID INTERNATIONAL Chapters

US/Canada Chapters

INNOVATIONS

Illustration of RAD-AID Medical Airship, under planning and construction 2017-2020, with Straightline Aviation and Lockheed Martin for bringing vital humanitarian, radiologic, and medical aid to isolated populations.

RAD-AID blends charity, public service and technology innovation to push the envelope of what radiology can bring to the world. In addition to our numerous teams working in fifty-three hospitals all over the world, our innovations are also driving our vision for the future. One innovation from RAD-AID is our work on the medical airship, in collaboration with Straightline Aviation, capable of reaching remote environments for health care delivery and disaster response.

RAD-AID is also developing new ways of integrating PACS and artificial intelligence for low-resource regions by working on advanced architectures for cloud and local servers that can advance image storage, retrieval, and analysis so that these technologies help settings without available personnel and IT infrastructure.

RAD-AID is also trying to advance the use of geographic public health data through advanced mapping and geographic information systems (GIS) research so that we can better find populations that need us and navigate efficient strategies for reaching those communities.

We welcome you to become part of RAD-AID as a growing global organization of advocates for medical technology in poor and developing countries.

MOBILE HEALTH

RAD-AID Mobile Health brings radiology to those in need via transport vehicles for overcoming geographic, infrastructural, and sociocultural barriers. In 2012, RAD-AID launched Asha Jyoti for cancer screening to marginalized women in India. In 2016, RAD-AID announced a novel partnership with Straightline Aviation to build the first medical airship with deployable container-based clinics, designed to reach remote areas that lack transportation infrastructure. In mid-2017, RAD-AID deployed assistance teams to The Health Wagon in Appalachia, Virginia, for rural underserved in the United States. In late 2017, we built the RAD-AID Healthmobile as an innovative artificial intelligence-enabled mobile health vehicle for cardiovascular and breast care outreach. In 2017, RAD-AID advanced its Geographic Information Systems (GIS) research for advanced mapping of infrastructure, poverty and medically underserved communities for improved navigation of mobile health strategies.

RAD-AID Mobile Health designs and implements mobile solutions to overcome health care disparities, including truck-based clinics

RAD-AID Healthmobile designed and built in 2017 for mammography, cardiovascular, and multidisciplinary outreach to underserved populations.

RAD-AID Appalachia helps underserved areas of rural Virginia in the US, including assistance to the Health Wagon and Remote Area Medical, 2017.

As a partnership between RAD-AID and PGIMER Chandigarh, Asha Jyoti has given medical care to over 19,500 women since 2012

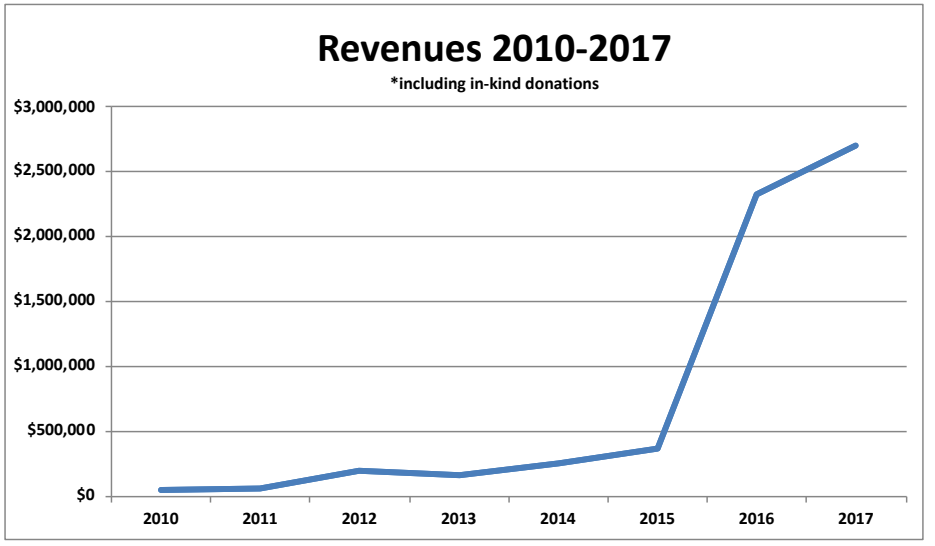
RAD-AID Medical Airship photo based on collaborative trip with Lockheed Martin to Ghana, 2017

FINANCIALS

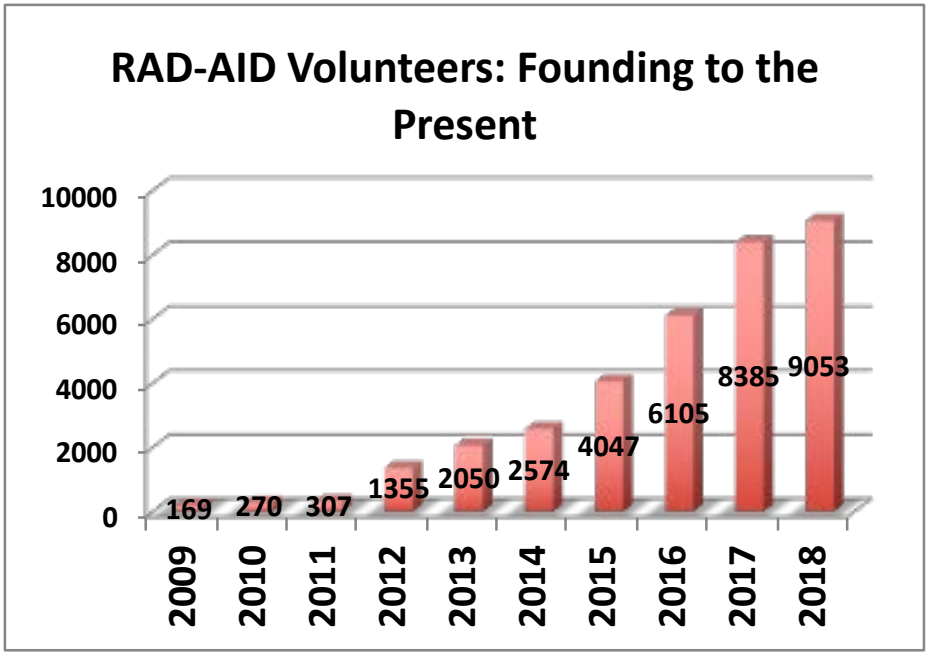
RAD-AID is committed to financial transparency and has maintained a Gold Star rating from GuideStar since 2015. All financial data from RAD-AID is reported with downloadable PDFs on the RAD-AID web site, covering 2009 to the present. We show some highlights of recent RAD-AID finances below.

In 2014 and 2015, RAD-AID's volunteer base rose from ~2500 to 4000 contributors and RAD-AID surpassed 9,000 supporters in the beginning of 2018 spanning 105 countries.

In 2016, RAD-AID's volunteers donated 19,880 hours of pro bono work for radiology capacity building in the developing world, valued at close to $1 million of in-kind labor support. In 2017, RAD-AID volunteers donated 27,250 hours of work, valued at more than $1.3 million of in-kind work contribution. Since our inception, RAD-AID has contributed over $5 million in donated equipment, grants and personnel time to the underserved regions of the world.



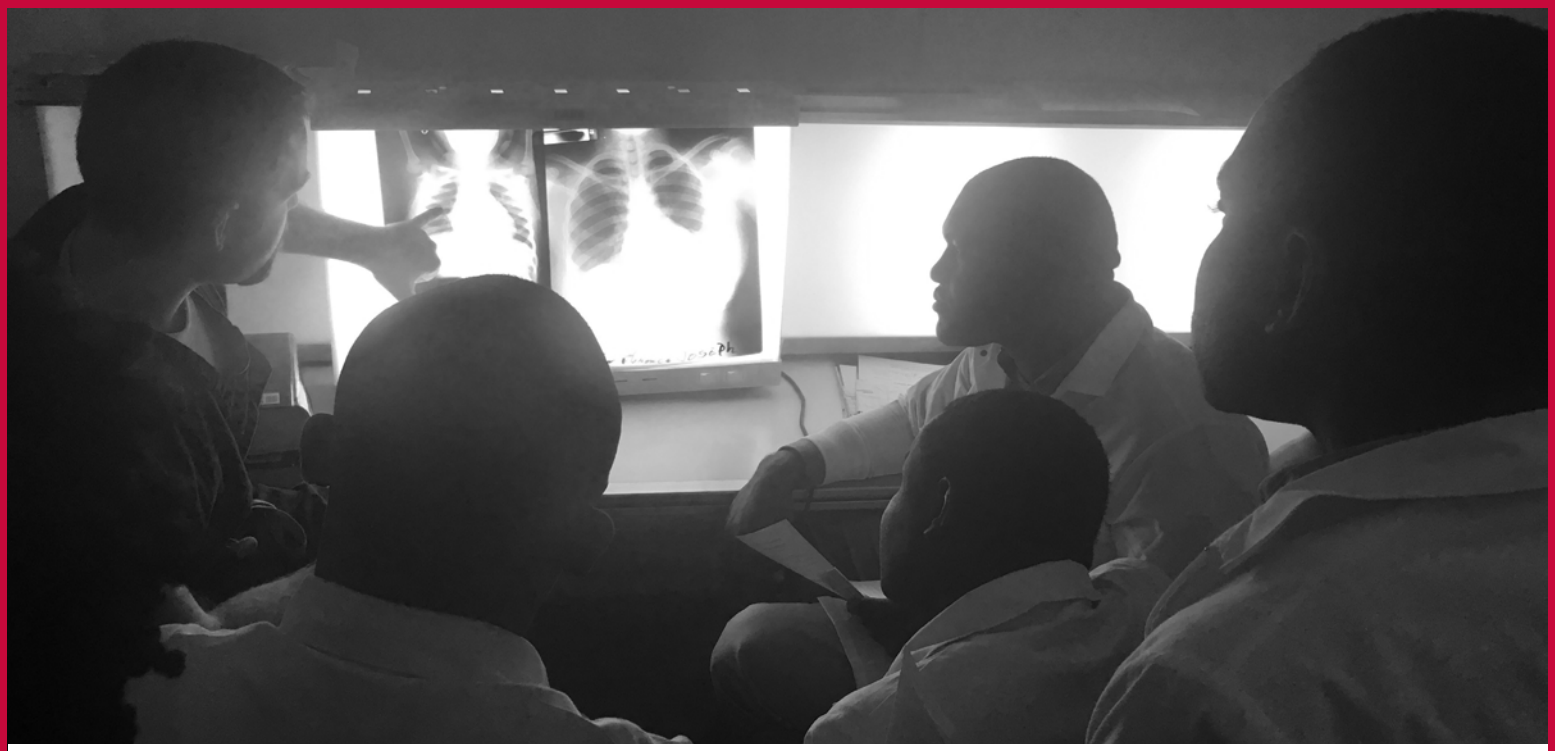
Our administrative portions of expenses remain under 15% of revenues, reaching the best standard for nonprofit resource allocations. The composition of RAD-AID's volunteers has been approximately 50% physicians, 35% technologists, and 15% from nursing, business, engineering, and nonprofit management backgrounds. The organization remains entirely run by volunteers with no paid staff in the management team and no employees.



RAD-AID INTERNATIONAL
is a GuideStar Exchange Gold Participant

Conclusion and Thank you!

We hope this 2017-2018 report from RAD-AID has been informative as an overview of our progress and efforts to help radiology across the world. 4 billion people have little or no access to radiology. This means RAD-AID has a lot of work to do, and we are inspired by the contributions from our volunteers and supporters. Having begun as a handful of people, the organization has grown in scale while staying true to our fundamental mission and core strategy that interlocks data analysis, systematic program development, education, and on-site team presence. This approach yields a long-term sustainability that always emphasizes the building of in-country local radiology capacity. More importantly, our strategy is founded on a spirit of hope and charity to improve the world.



RAD-AID Haiti teaching session for radiology residents and staff.

We thank you for taking the time to learn about our programs. This review only scratches the surface of the complex and inspiring challenge of bringing advanced radiology imaging to resource-limited and poor countries of the world. Radiology is fundamental for all aspects of medicine, including surgical planning, trauma, cancer staging and care, obstetric prenatal services, pneumonia/TB diagnosis, and cardiovascular management. Without radiology, health care systems across the world have numerous gaps that crack the chains of effective health care delivery. RAD-AID answers this call to meet those needs and serve the world.

Be a part of RAD-AID. Volunteer to become part of the RAD-AID Team!
Please visit us at www.rad-aid.org to learn more.

RAD-AID.org
Radiology serving the world