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Title: ECHOCARDIOGRAPHY TRAINING AMONG HEALTHCARE PROVIDERS IN RURAL RWANDA

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Background & Aims: Specialist shortage remains a concern for suboptimal healthcare delivery in developing countries. Rwanda has around 6 cardiologists and even fewer which are based in public facilities including district hospitals. This shortage limits access to echocardiographic tests, thereby risking late diagnosis of heart diseases. To address this gap, the Rwanda Biomedical Center (RBC) in collaboration with Team Heart (TH) and Partners in Health (PIH) convened a clinical placement mentorship for non-communicable disease (NCD) nurses and physicians working at district hospitals. The program aims to equip providers with echocardiography skills to promote prevention, early diagnosis, and treatment of heart conditions.

Methods: RBC identified NCD nurses with basic echo training. TH and PIH brought skilled sonographers from the USA to provide a 5-day intermediate training at selected district hospitals. The training was divided into one day of theoretical lectures followed by four days of hands-on training. A baseline echo knowledge pre- and post- training test were administered to evaluate knowledge improvement. Before the training, the selected NCD nurse conducted a community screening around the hospital to identify asymptomatic patients with heart disease. Children with suspected heart conditions were invited for a full echo review during the training. Under the supervision of a trainer, trainees rescreened and proposed a diagnosis and a treatment plan for identified patients from the community and hospital inpatients with suspected and confirmed heart conditions. Each ultrasound examination was followed by a group discussion to allow trainees and trainers to share ideas and ask questions on the medical findings.

Results: Between January 2022 and February 2023, we conducted four echocardiography training trips for NCD health care providers working in NCD clinics and internal medicine departments at district hospitals. A total of 39 health care providers including 21 NCD nurses and 18 physicians were equipped with basic and intermediate echocardiography skills. The trainees received a pre- and post-test to evaluate their knowledge improvement. The average score was 30% and 90% for pre- and post-test respectively, with a significant increase of 59%. While only 35% of participants passed the pre-test, everyone passed the post-test. A total of 390 patients were provided with comprehensive echo reviews, eight of which were referred for care or surgery.

Conclusions: Given the scarcity of cardiologists, echo training for health providers at district hospitals is a step closer to expanding access to early diagnosis and treatment of cardiac diseases. Participants are equipped with echo skills to provide comprehensive echo review, propose a diagnosis and initiate treatment for patients suspected to have heart disease. However, there remains a need for continued training and mentorship. Future interventions include training individuals with expert echocardiography skills to become mentors, developing a national echo training curriculum approved by concerned medical training institutions, and using technology to ensure continued mentorship.