



Building Cardiac Surgical Programs in Low-Income Countries

Objective: Medical care in low-income countries is often limited by inadequate resources with respect to medical personnel, treatment facilities, and the necessary infrastructure for health care delivery.

We hypothesized that the development of an independently functioning, internationally supported, Kenyan cardiac surgical training program could address many of these issues through targeted investment.

Methods: A review was conducted of the programmatic structure and clinical outcomes from January 2008 to October 2021 at Tenwek Hospital, Bomet, Kenya. Program development phases included 1) cardiovascular care provided by one full time US board certified cardiothoracic surgeon, 2) introduction of short-term volunteer surgical teams from the US and Canada, and 3) development of a cardiothoracic residency program based on the Society of Thoracic Surgeons (STS) training curriculum. Patient demographics and both early and late term outcomes were recorded and analyzed throughout each phase of program development.

Results: A total of 785 cardiac procedures were performed during the study period, including 214 congenital (27.3%) and 571 adult (72.7%) procedures. Endemic rheumatic valvular heart disease predominated ($n = 447$, 56.9%). Local surgical team case volume grew over the study period, overtaking visiting team procedure volume in 2019 (Figure 1). Perioperative mortality was low at 2.1% and demonstrated consistency between cases performed by visiting teams and the local independently trained team. Surgical training via a 3-year cardiothoracic residency is now in its 4th year, with the first graduate now retained as fulltime teaching staff. Residents participate in a didactic curriculum based on the STS Core Curriculum and are certified by the College of Surgeons of East, Central, and South Africa after completion of both written and oral examinations at the end of their training.

Conclusions: Global health partnerships like the ones which have supported Tenwek Hospital have the potential to address unmet needs in cardiac care within low and middle-income countries. These data support the concept that acceptable clinical outcomes and consistent growth in volume can be achieved during the transition towards fully independent cardiac surgical care. This is the only accredited residency program between Cairo, Egypt and Johannesburg, South Africa for the entire Sub-Saharan Africa and may serve as a framework for others in sub-Saharan Africa and globally.

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