Letter to the Editor

To the Editor: Humanitarian Cardiac Surgery Care for Developing Countries: Role in Achieving Sustainable Global Health

Key words: Global health – Cardiac surgery – Cardiovascular – Pulmonary – Developing countries

Cardiovascular disease (CVD) in children and adults in least developed countries is on the rise in both urban and rural communities. In the case of sub-Saharan Africa, CVD is now a leading cause of premature deaths, with poor health infrastructure and shortage of skilled cardiac healthcare professionals. There is much discussion among members of the cardiac surgical specialty as to how best to address the latter in such countries. Previously, we have proposed that several actions aimed at implementing humanitarian programs to support nonaffording patients in health systems around the world, would be a forward way. However, the European Association of Cardiothoracic Surgery and its International Committee, on the other hand, does not believe that the best solution is achieved by sending teams to the developing world. Their point of justification is that teamwork is particularly important in cardiac surgery, where the weakest link can determine the ultimate outcomes of surgery. Using this as our starting point, we explored ways of implementing training in local centers partly funded through charitable donations and a public private partnership model.

The CardiacEye International Foundation (CEIF; www.cardiaceye.com) team made an exploratory visit to the coastal city of Mombasa in Kenya, to explore contacts with government representatives and health ministers and local hospital doctors and administrators. During this visit, CEIF assessed and examined the levels of local experience and knowledge and the available equipment. A project proposal was put forward aiming to expand scope for provision of cardiac surgery services locally to nonaffording patients through collaborative training of specialists depending on the needs. A cardiovascular surgical team was put together made up of a cardiologist, a surgeon, an anesthetist, a perfusionist, a scrub nurse, an intensive care nurse, a respiratory therapist (or both), and a ward nurse where necessary.

Examples of Successful Working Model

In the successful projects, we encouraged the local teams (surgeons, anesthetists, intensivists, perfusionists, nurses, etc.), to attain sufficient hands-on experience despite the limited number of surgeons and anesthetists available as trainers. The local authorities worked in coherence with our foundation to initiate, develop, and improve cardiac surgery facilities including the initial investment on equipment, and disposable material. This defines our peculiar role as a visiting team—thus enabling the locals to learn the necessities for a cardiovascular program. Donations of used equipment came from hospitals and companies with which we have contacts, especially after the projects gained momentum and results could be demonstrated, to
show the donors that the projects were worthwhile and sustainable.

**Financing Humanitarian Projects**

The establishment of projects varied from country to country and situation to situation. In Peru and Nigeria, we were invited by the government that wished to initiate cardiac surgery, in particular coronary artery surgery. In Pakistan and Kenya, hospital authorities requested our collaboration. In this manner, financial support varied from one project to another as some projects were government-sponsored; in others, resources from our charitable foundation were used. However, with time and experience, we also discovered that it is not always beneficial for the purpose of teaching and transmission of knowledge, to make projects totally free of charge. We now encourage joint ventures between the local government or hospital and our foundations, the prices of services being minimal and adapted to local standards, but not totally free.

**Transition of Surgeries from Visiting Team to Local Team**

Our ultimate aim was to ensure that local staff operated fully independently through our teaching and training in a timely manner over a 6 years period to ensure patient welfare is at the heart of future development. Visiting staff such as nurses, then the perfusionist, and then the anesthetist will gradually be withdrawn, with time leaving only the surgeon in the last 3 years of the project. A similar reduction schedule was followed in our other long-term projects.

**Future of Humanitarian Cardiac Surgery Program in Developing Countries**

In the course of our ongoing projects, we put into place strategies for evaluating the surgical results of surgery based on risk prediction using the Euroscore system. Our experience has shown that teaching heart surgery can be done locally and can lead to sustained independence in emerging nations. Through CardiacEye Foundation, more than 300 patients benefited from surgery that they would not have undergone had the teaching been done either in the USA or Europe.

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**References**

1. Pezzella AT. Progress in international cardiac surgery: emerging strategies. *Ann Thorac Surg* 2001;71(2):407–408
2. Ghosh P. Setting up an open heart surgical program in a developing country. *Asian Cardiovasc Thorac Ann* 2005;13(4):299–301
3. Elahi MM, Matata BM. Cardiac surgery for communities in need—meeting the continuous challenges for delivering new models of global humanitarian health programmes. *MOJ Surg* 2016;3(1):1–2
4. Roques F, Nashef SA, Michel P, Gauducheau E, de Vincentiis C, Baudet E et al. Risk factors and outcome in European cardiac surgery: analysis of the Euroscore multinational database of 19030 patients. *Eur J Cardiothorac Surg* 1999;15(6):816–823