

Congenital heart disease in Africa threatens Sustainable Development Goals

Labaeka's^[1] case study in this issue of the *SAJCC* describes the fatal outcome of a baby presenting late, *in extremis*, with transposition of the great arteries. This is a typical example of what many African parents face when their newborn baby is diagnosed with complex congenital heart disease (CHD).

CHD is the most common birth defect, and is associated with higher mortality than any other congenital abnormality.^[2] In Africa, late presentation of CHD is the norm.^[3,4] Complications due to multi-organ involvement usually prompt the families to seek medical advice. Once the baby presents with established organ dysfunction, decision-making around early timed treatment and surgery becomes critically complex.^[2]

Pulse oximetry, an easy and inexpensive screening strategy, can help to diagnose complex CHD at birth and alert healthcare workers to direct babies timeously for further assessment before complications develop.^[4,5]

Access to affordable comprehensive cardiac healthcare is restricted to a handful of specialised cardiac centres on the African continent. A few lucky children receive treatment from philanthropic fly-in-fly-out medical missions sponsored by high-income countries (HICs). However, this healthcare model is not sustainable unless long-term co-operation and education programmes are established between local and international healthcare teams. The only alternative treatment option for families is to send their baby to specialised paediatric cardiac centres abroad. This is unfortunately unaffordable for the majority of African families.^[3]

Worldwide, the prevalence of CHD is estimated at 1.8 per 100 live births, according to the 2017 Global Burden of Diseases, Injury and Risk Factor (GBDIRF) study funded by the Bill & Melinda Gates Foundation. Approximately 261 247 people died of CHD during the study year, and 69% of the deaths occurred in children <1 year old.^[6]

Despite the seemingly high mortality, CHD treatment has been one of modern medicine's greatest success stories. Management of CHD has grown from the first pioneers creating the Blaloch-Taussig shunt for tetralogy of Fallot in the 1940s, to the present-day subspecialty of paediatric cardiac critical care and dedicated paediatric cardiac intensive care units.

There are currently more adult survivors worldwide living with complex congenital heart lesions than children.^[7,8] The 2017 GBDIRF study found that about 12 million people are living with CHD worldwide.^[5] Survival has become the norm in HICs, and nowadays medical treatment is focused on improving quality of life by reducing morbidity.^[2,8]

In HICs, 85% of all children with CHD survive to adulthood. Almost 95% of children with simple CHD lesions such as ventricular septal defect, and 90% of moderate complex CHD such as tetralogy of Fallot or neonatal coarctation, survive long term. Currently, ~80% of children with complex CHD such as transposition of the great arteries or truncus arteriosus survive to adulthood in HICs.^[8]

Despite the 34.5% reduction in global CHD mortality during the past decade, Africa's CHD deaths have increased. The increased mortality is linked to poverty and limited access to appropriate treatment.^[4] During the past decade, CHD mortality has increased in the central, eastern and western sub-Saharan regions by 38.1%, 4.6% and 40.3%, respectively. Southern sub-Saharan Africa was the only region that demonstrated a decline in CHD deaths of 20.1%.^[6]

Furthermore, the GBDIRF study^[6] found a 4.2% global increase in birth prevalence of CHD between 1990 and 2017. Expanded paediatric cardiology, cardiac surgery and cardiac critical care services are required to treat the increasing number of children born with CHD. In particular, low- and middle-income countries (LMICs) lack sufficient paediatric cardiology, cardiac surgery and cardiac critical care infrastructure and expertise to cope with the increasing burden of CHD.^[3,9-11]

Currently, there are only 22 cardiac centres in Africa performing a mean of 18 open heart surgeries per million people, compared with 169 per million people worldwide.^[10] Reports estimate that around 90% of all children in Africa with CHD do not have access to appropriate medical care.^[12,13] Without proper medical treatment, approximately one-third of the children born with moderate and severe CHD will not survive beyond the neonatal period, and half will die in early infancy.^[13] Without appropriate treatment, those who do survive beyond infancy will suffer debilitating complications.^[4,14,15]

The Sustainable Development Goals (SDGs), signed by all members of the United Nations in 2015, aim to reduce neonatal and under-5 mortality by 2030.^[16] Successful programmes addressing communicable diseases such as HIV, TB and malaria, and childhood immunisation, are examples of what can be accomplished in Africa.^[17,18] Following pneumonia, diarrhoeal disease and birth conditions, CHD is the seventh-most common cause of childhood mortality in Africa.^[6] Unfortunately, among these competing healthcare needs in Africa, CHD has received very little priority compared with communicable diseases.^[17,18]

Political leaders need to be made aware that cost-effective CHD treatment can be implemented in Africa with successful long-term outcomes.^[13,17] Schidlow *et al.*^[19] describe excellent outcomes for children with complex CHD in LMICs. This study, from the International Quality Improvement Collaborative for Congenital Heart Surgery in Developing World Countries, showed 85% early survival after corrective surgery for transposition of the great arteries (778 operations) in 26 paediatric cardiac centres in developing countries across the world. Uganda was the only African nation included in this report. Edwin *et al.*^[20] showed that even late surgery for transposition of the great arteries can be done successfully in a specialised paediatric cardiac surgery centre in Africa.

Given the increase in CHD prevalence and the consequent increase in mortality, sustainable CHD treatment should be prioritised as a major focus towards reaching the SDGs in Africa. Failing to build this capacity, CHD may become a major contributor to missing the 2030 SDG target.

B Rossouw, MB ChB, DTM&H (SA), MMed (Paed), Cert Crit Care (Paed), Cert Cardiol (Paed), DPC
Paediatric Intensive Care, Department of Paediatrics and Child Health, Red Cross War Memorial Children's Hospital and University of Cape Town, South Africa
beyra.rossouw@uct.ac.za

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