

## Paediatric cardiac services in South Africa

South Africa has failed to treat its children well, as demonstrated by our failure to achieve adequate progress towards the Millennium Development Goal of reducing the under-5 mortality rate, doing far worse than many poorer countries.<sup>1</sup>

Causes of this poor performance include high HIV prevalence, poverty and a struggling health service, with most under-5 children dying from HIV-related illness, low birth weight, diarrhoeal disease and lower respiratory tract infections.<sup>2</sup> Addressing these diseases and preventing these deaths should be a priority of our health service. This requires attention to poverty alleviation and social interventions, maternal health and improving district and regional health facilities.

A significant number of South African children, however, die from conditions that can be successfully managed only at specialised centres. Of these, congenital heart disease (CHD) is among the most prevalent, with an estimated 11 000 children born annually in South Africa with this condition (0.6 - 0.8/1 000 liveborn children have CHD). Each year approximately 4 500 of this total require surgical intervention. With appropriate care, the prognosis for most of these children is excellent, with at least 85% expected to survive to adulthood.<sup>3</sup> In developing countries the persistently high prevalence of rheumatic fever, with its destructive consequences for heart valves, increases the burden of children's heart disease.<sup>4</sup>

We have been steadily falling behind internationally accepted levels of care for children with congenital and acquired heart disease. The extent of this under-servicing is quantified in the recent 'Audit of paediatric cardiac services in South Africa'.<sup>5</sup> In 2006, approximately 1 300 patients were operated on for CHD in South Africa, only 800 of them in the public service hospitals, which serve close to 85% of the population. This means that less than 25% of the children in South Africa with CHD who rely on the public health services receive the care they need. Disregarding the accumulated backlog of untreated CHD, every year over 3 000 children die or remain disabled from their congenital heart condition.

The reasons for this neglect are threefold.

Paediatric cardiac services are unable to meet the demand. At the end of 2008, 24 paediatric cardiologists were practising in this country, half in the private sector and half in the public sector. According to international recommendations,<sup>6</sup> South Africa needs at least 88 paediatric cardiologists. Reaching this goal necessitates training more paediatric cardiologists and retaining them in the public sector and the country. A significant part of the problem is the paucity of trainee posts and staff positions for trained cardiac practitioners in the public sector. Many paediatric cardiologists are in private practice because they cannot get an appropriate position in a state facility.

The capacity to successfully manage the full patient load is seriously limited in all public sector hospitals. The major bottlenecks are theatre availability and postoperative intensive care, which require highly specialised nursing and medical management. Paediatric cardiothoracic surgeons with adequate training and experience are also scarce, with only 12 practising in the country, and not all of these are trained to operate on the full spectrum of congenital heart conditions. To develop and maintain surgical skills within a paediatric cardiac unit, international recommendations suggest that a unit do at least 250 operations per year.<sup>7</sup> This would require 6 - 8 dedicated postoperative intensive care beds, with appropriately trained medical and nursing staff. Each surgeon is required to do at least 126 operations annually to maintain surgical skills. With only one state centre performing the recommended number of operations,

it is extremely difficult for surgeons and heart units to develop and maintain skills, let alone train the next generation of surgeons. In addition, successful outcomes depend not only on the skills of the surgeons but on a full team of health care professionals including anaesthetists, intensivists, theatre and intensive care unit staff, all of whom perform critical roles and must also maintain skills.

Ironically, only a fraction of CHD patients are referred for intervention. CHD is commonly missed, misdiagnosed or identified too late. This is most important, because as much as 20% of CHD presents with life-threatening illness in the neonatal period where survival depends on timely diagnosis, management and referral. A good example is simple transposition of the great arteries (TGA), for which an arterial switch operation within the first 2 weeks of life is needed. If TGA is not diagnosed and managed timeously, most of these children will die shortly after birth. In 2006, only 30 babies with simple TGA received surgery in South Africa, 18 of whom were operated on in public sector hospitals. Extrapolating from international data,<sup>8,9</sup> we should have operated on over 100 babies for TGA in that year, implying that each year about 70 babies with simple TGA die because they are not identified or referred. Many other neonates with equally life-threatening CHD face a similar fate.

The consequences and costs of untreated CHD are considerable. For example, survivors of CHD without surgical intervention require frequent hospital visits and repeated admissions for the complications of unoperated CHD. The continued need for highly specialised medical treatments places a significant financial and emotional burden on already impoverished caregivers and families. It is even more frustrating for both families and health care personnel when they are aware that effective treatment is possible, but unavailable because of the patient's geographical and economic situation.

There are many examples of congenital heart programmes run with varying degrees of success in the developing world, even in more impoverished countries.<sup>10-14</sup> No 'quick fix' exists, and a long-term commitment is necessary for success, including recognition by politicians and community leaders that this tragedy of preventable death is unacceptable. A solution requires political commitment with appropriate policies and planning at all levels, to massively increase efficient and cost-effective service delivery for paediatric heart disease.

The infrastructural and human resource needs for the adequate care of children with cardiac disease in South Africa have been described.<sup>15,16</sup> Development of comprehensive paediatric cardiac services depends on improvements at all health care levels, primary, secondary and tertiary. In particular, urgent attention must be paid to addressing deficiencies in neonatal and paediatric intensive care services.<sup>17,18</sup>

There are further compelling reasons why proper paediatric cardiac services should be developed and maintained. Firstly, an absolute requirement for a successful curative surgical programme is teamwork by many departments and services, all providing high-quality care. Our performance with children's heart disease acts as a broad measure of our commitment and success in attending to the health care needs of our children and also of the general state of our hospital services. Better care for these children can act as a catalyst to improve paediatric health care as a whole.<sup>19</sup> Secondly, improving paediatric cardiac care would provide a beacon of hope to the rest of sub-Saharan Africa, where such services are virtually non-existent.<sup>20</sup> However, should we allow the decline to continue, or the services to collapse, many more children with the potential to

live full, economically active lives will be condemned to a premature, preventable death.

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## **Tuberculosis in prisons in sub-Saharan Africa – a potential time bomb**

The World Health Organization (WHO) estimates that there are 10 million new cases of tuberculosis (TB) reported worldwide each year, and 1.7 million people die from the disease.<sup>1</sup> The incidence of TB in sub-Saharan Africa (SSA) remains very high at over 300 new cases of TB per 100 000 population in 2007.<sup>2</sup> The TB epidemic in SSA is fuelled by the HIV epidemic, and up to 70% of adults with TB are co-infected with HIV.<sup>2</sup> There are few data on drug-resistant TB from SSA,<sup>3</sup> probably owing to poor TB programme performance, inadequate laboratory facilities for drug susceptibility testing (DST), and poor surveillance, data collection and reporting procedures. The WHO estimated that 69 000 cases of MDR-TB emerged in 2008 in Africa, which is most probably an underestimate.<sup>1</sup>

The global focus on TB control is on early diagnosis and treatment of people in the community in high TB- and TB/HIV-endemic countries. People concentrated in confined situations, such as prisons, are important but often neglected reservoirs for TB transmission, and

threaten those in the outside community. The European Academies of Sciences Advisory Committee on drug-resistant TB in Europe emphasised the poor TB control in prisons and the rapid spread of TB between prisoners and prison staff.<sup>4</sup> Data from SSA prisons indicate a similar ominous situation in prisons in Africa. The prevalence of TB in SSA prisons is estimated to be 6 - 30 times higher than that in the general population.<sup>5</sup> The TB incidence rate in Zambian prisons is 5 285 cases per 100 000 inmates per year, which is about 10 times that of the outside population.<sup>6</sup> A Center for Disease Control study of Botswanian prisons led to important recommendations, including active screening, contact investigation, reduction of transmission, and isoniazid preventative therapy for HIV-positive prison inmates and guards.<sup>7</sup>

TB in prisons threatens inmates and prison staff (wardens, cooks, clinical staff etc.), who are at particular risk of acquiring TB because of the conditions and working environment. Staff also interact with