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## Management of patients with rheumatic fever and rheumatic heart disease in Nigeria – need for a national system of primary, secondary and tertiary prevention

Samuel I Omokhodion

Rheumatic fever/rheumatic heart disease (RF/RHD), which are non-suppurative complications of group A  $\beta$ -haemolytic streptococcal pharyngitis due to delayed immune response,<sup>1,2</sup> affect children and young adults living in developing countries where poverty is widespread.<sup>3</sup> Up to 1% of schoolchildren in Africa, Asia, the Eastern Mediterranean region and Latin America show signs of RHD.<sup>3</sup> It is estimated that 12 million people are affected by RF/RHD and two-thirds of these are children between the ages of 5 and 15 years.<sup>3</sup> There are about 300 000 deaths each year, with 2 million people requiring repeated hospitalisation and 1 million likely to require surgery globally.<sup>3</sup> The burden of RF/RHD in the industrialised world began to decrease in the late 19th century, with a marked decrease after the 1950s. This decline coincided with an increase in the standard of living and improved access to medical care.<sup>4</sup>

While the disability-adjusted life years (DALYs) lost as a result of RHD have been estimated at 27.8 and 56.1 per 100 000 population in the Americas and Europe respectively in the year

2000, the picture was more grim in Africa and South-East Asia where in the same year the DALYs lost were 119.8 and 173.4 per 100 000 population, respectively.<sup>1</sup>

### Is RF/RHD a non-group A streptococcal disease in Nigeria?

The epidemiological association between group A  $\beta$ -haemolytic streptococcal throat infections and the subsequent development of acute RF has been well established.<sup>5,6</sup> In 1971, the  $\beta$ -haemolytic streptococcal throat carriage rate was found to be 13.3% among public school children in Lagos, South Western Nigeria.<sup>7</sup> A more recent cross-sectional survey in 2001 among public and private schoolchildren in Benin City (mid-western Nigeria) found the streptococcal throat carriage rate to be 9.78%, but no Lancefield group A isolates were found. Lancefield groups C, G, F and B were identified, with frequencies of 38%, 36%, 20%, 6% and 7% respectively.<sup>8</sup>

Group A streptococcus is the only group credited with the capacity to cause non-suppurative sequelae. The dominance of Lancefield groups other than A in tropical and subtropical countries has raised questions about the possibility that non-group A beta-haemolytic streptococci may cause RF and

Division of Paediatric Cardiology, Department of Paediatrics, University College Hospital, Ibadan, Nigeria

Samuel I Omokhodion, MB BS, FWACP, FNMCP

Corresponding author: Samuel I Omokhodion (samuel\_odion@hotmail.com)



acute glomerulonephritis.<sup>1,5,6</sup> Some workers have alluded to the possible roles of groups C and G in humans with non-suppurative sequelae since they are the predominant groups in the tropical and subtropical countries, where the prevalence of RF/RHD is high.<sup>1,4</sup> However direct evidence for such a role has yet to be provided.

## Health care facilities in Nigeria

Nigeria (Fig. 1) has an estimated population of 129 million people,<sup>9</sup> and is served by a pyramidal health care structure comprising 6 first-generation teaching hospitals in Ibadan, Lagos, Enugu, Zaria, Benin City and Ile-Ife, 16 federal and state-owned teaching hospitals, and an array of federal medical centres, newer state and private university teaching hospitals that number about 52, all of which are designed to function at tertiary health care level. At the secondary level of care are the general hospitals, one in every major city, managed by the state governments, while at primary health care level are the primary health care centres (PHCs), one in every community level, which are managed by the local government council authorities.

A referral system up the ladder goes from primary to tertiary level via the secondary levels depending on the case being referred. The major problem plaguing the system to date remains the reluctance of qualified staff to take up employment in the rural areas because of lack of basic social amenities including good schools to serve their needs. Consequently

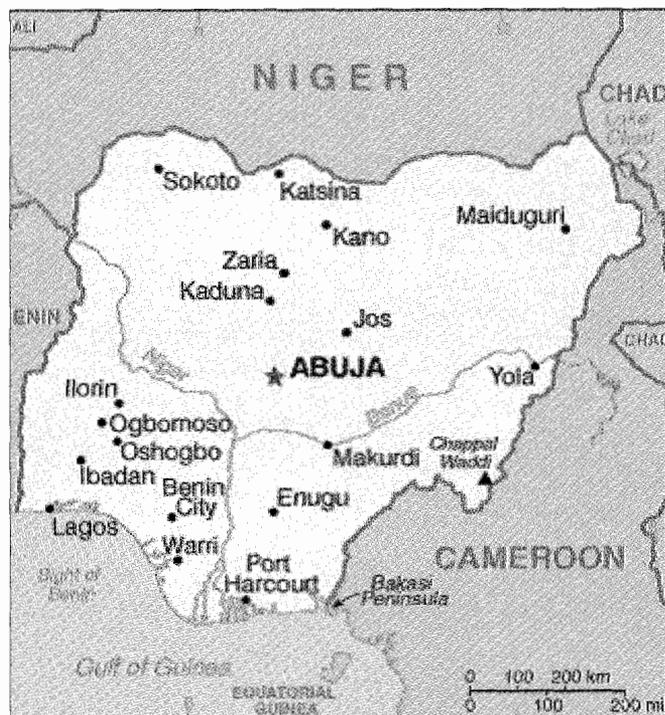


Fig. 1. Map of Nigeria showing major cities.

**Table I. Patients treated for structural heart of the programme disease under the auspices of SACHN in the first 6 years**

Patients who had open heart surgery (N)	144
Patients who had valvular surgery (N)	28
Patients for whom records were available (N)	25
Children	19
Adults	6

SACHN = Save A Child's Heart Nigeria.

**Table II. Patients who had valvular heart surgery in the study period**

Category of structural heart defects	Number of patients (%)	Age range (yrs)
Congenital	8 (32)	1.5 - 20
Acquired (RHD)	17 (68)	9 - 36

**Table III. Types of valvular heart surgery in the first 6 years of the SACHN programme (N (%))**

Valve repair	12 (48)
Valve replacement	7 (28)
Valve repair and valve replacement	5 (20)
Ross procedure	1 (4)

SACHN = Save A Child's Heart Nigeria.

there is a disproportionate concentration of qualified staff in the urban areas. The effort by the government in tackling this problem has been to impose the mandatory 1-year post-qualification national youth service scheme (NYSC) which ensures the posting of doctors to the rural areas. Less than 1% of such doctors take up permanent employment in those facilities on completion of their compulsory service year.

At the tertiary level, only two of the centres, viz. University of Nigeria Teaching Hospital Enugu (funded by the federal government), and Lagos State University Teaching Hospital Ikeja (funded by the state government), have established facilities for open-heart surgery involving extracorporeal circulation. The programme at Enugu has been hampered by inadequate funding so that open-heart surgical operations are intermittent undertakings. The Lagos programme on the other hand is hampered by an inadequacy of personnel and therefore relies on periodic visits by a surgical team from the USA. In Ibadan, where expertise for open-heart operations exists, facilities are available only for palliative non-pump procedures.

## Non-governmental initiatives for the treatment of heart disease in Nigeria

Over the last 7 years the author has rallied others through the agency of a non-governmental organisation, Save A Child's



Heart Nigeria (SACHN),<sup>10</sup> and embarked on collaboration with centres willing to subsidise the cost of treatment in Israel, Ghana and India; in that time SACHN has provided for the treatment of 174 patients with structural heart disease across the country.

A similar foundation, the Kanu Heart Foundation, founded by a popular footballer who has himself been treated for valvular heart disorder, has provided for the treatment of a similar number of patients, also abroad. As part of the capacity-building programme of SACHN, training of personnel in Israel<sup>10,11</sup> and infrastructural development in Ibadan have been paramount since inception, and in the near future a new facility known as Bethesda Heart Center will be opened in collaboration with Medical Care Incorporated USA which will provide for open-heart surgical operations and closed (interventional) procedures. To the best of the author's knowledge, the only other access to surgical treatment of cardiac diseases available to Nigerians is through multinational agencies and government organs that ferry their staff abroad for such treatment. Some wealthy Nigerians also in need of such treatment can afford to procure it abroad. In reality therefore, despite an enormous need, surgical treatment of rheumatic valvular heart conditions in Nigeria still leaves much to be desired.

### Save A Child's Heart Nigeria (SACHN) – follow-up experience

Tables I - III present the profiles of patients treated surgically in Israel and Ghana under the auspices of SACHN in the first 6 years of the programme illustrating the number of patients who had valvular surgery and the proportion that was due to RHD. There was 1 death; a 13-year-old boy died 13 days after surgery of complications related to a prosthetic heart valve. All the other patients are still alive and the major problem with their follow-up remains that of poor compliance with warfarin despite the free supply provided by SACHN to avoid use of adulterated forms. In such cases it is difficult to maintain INR values in the desired range. As patients no longer have overt symptoms, (some as many as 50%) also do not keep their follow-up appointments. One patient, a 20-year-old woman, survived haemarthrosis and mild intracranial haemorrhage resulting from overdosage of warfarin when she was sold 5

mg tablets as 1 mg tablets at a local chemist. Six months later she presented with a 3-month pregnancy which she terminated without informing the doctor she was taking warfarin. She was again referred because of excessive bleeding, and again she survived following multiple blood transfusions.

The cost of the operations was met by the combined subsidy provided by the foreign institutions where the patients were operated on, contributions from the families, and funding raised by SACHN through appeals to corporate agencies and philanthropists, since there was no health insurance scheme at the time of undertaking the treatment.

### A national system of care is needed for RF/RHD in Nigeria

There is a lack of a primary, secondary and tertiary (i.e. medical and surgical treatment) programme in Nigeria, and many other countries in sub-Saharan Africa. While it goes without saying that efforts should be geared towards improving living standards and eradicating poverty as the essential first step in the control of RF/RHD, funding is required to put in place the necessary infrastructure (the author recommends at least 6 open-heart surgical treatment centres spread across Nigeria) in order to curb the menace of RF/RHD.

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