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## Guest editors

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## Intervention for congenital and structural heart disease: Beyond the cradle

During the last four decades we have seen an exponential growth in interventions (both medical and invasive) to diagnose and treat adult cardiac disorders. Coronary stents are in their fourth generation and the developments in cardiac pacing and electrophysiology has shown the same rapid growth. Large numbers of patients at risk who require these treatment modalities have driven these developments and the interventions have made a difference to the lives of hundreds of thousands of patients across the globe.

Congenital heart disease on the other hand is much rarer and the conditions are often very difficult to diagnose correctly. Interventions for congenital heart disease often have to be individualised to a large extent due to the fact that patients' defects tend to be unique. This has led to a much slower development in this field. However, with paediatric cardiologists borrowing ideas from other interventional specialities and with the frequent off label use of devices, interventionists in this field have developed a unique set of skills not only suited to paediatric interventions but also applicable to adult structural heart disease. The emerging role of the structural heart disease interventionist in dealing with a large spectrum of cardiac conditions, from infancy to the very elderly, is highlighted in this issue of the SA Heart Journal which is dedicated to this topic.

The review of the management of congenital aortic stenosis in the neonate by Mitchell and Brown emphasises that treatment in young infants remains a challenging and contentious issue. Some studies slightly favour open surgical valvotomy, but on closer inspection a number of these were carried out in the early 2000s and some excluded young infants. Technology has changed considerably: newer low profile balloons and techniques such as rapid right ventricular pacing has augmented the success of balloon valvuloplasty in this age group. It should be realised that both early balloon valvuloplasty as well as surgical valvotomy in these infants primarily serve as a bridge towards later surgery. It is also clear that other factors such as valve morphology, left ventricular size and function have a significant impact on final outcomes.

Gewillig and Brown provide a sobering look at the management of tetralogy of Fallot and show how surgery has proceeded from palliation with poor long term survival to reparative with currently excellent long term survival. The article also points out how the emphasis on relief of outflow obstruction led to pulmonary regurgitation and right heart dilation which were mostly ignored for decades by physicians

until sudden deaths occurred. He challenges clinicians' concepts of what we consider "normal" and proposes a new strategy of earlier intervention using percutaneous valves in children with significant pulmonary regurgitation in native outflow tracts. The aim of this strategy would be to prolong life expectancy and preserve normal right ventricular function by intervention before irreversible right ventricular electro-mechanical dysfunction sets in. However, as the authors point out, the outcome of such a strategy will only become evident in 30 - 40 years from now.

Closure of patent foramen ovale after cryptogenic stroke is always controversial as the definition of what constitutes a truly cryptogenic stroke is highly variable and many consider PFO as a variant of normal, rather than a defect. Andreas Wahl and Bernhard Meier provide a balanced view on the management of this condition. The review is written from the perspective of the interventionist performing this procedure and whilst acknowledging the lack of evidence for the benefit of closure, they argue that although closure cannot be presented as the recommended treatment, it should at least be mentioned as an attractive option.

Finally, coming to the older patient in the age spectrum discussed in this issue of the Journal, Mark Abelson reviews the data and shares his views on the percutaneous closure of left atrial appendage to prevent strokes. This procedure provides a significant risk reduction for patients unable to take anti-coagulants for chronic AF, but newer data also argues for its use as an alternative to anticoagulants. The exact utility in a number of conditions is yet to be determined, but if the safety of the implantation can be improved, we will likely see a large expansion of its use in the next few years.

Structural interventions are here to stay and will continue to open up new avenues of treatment. As technologies improve more treatment modalities will become available that will benefit all patients, from the very young to the very old.