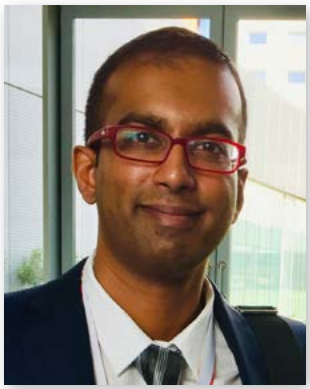
GUEST EDITORIAL

Cardiac surgery in South Africa: Have we failed our legacy?



D Reddy,[1,2] R Kleinloog,[1] and R Kinsley[1]

[1] Lenmed Ethekwini Hospital and Heart Centre, Durban, South Africa

[2] Nelson R Mandela School of Medicine, University of KwaZulu-Natal, South Africa

Address for correspondence:

Darshan Reddy

Suite 01 Floor 2 Block C

Lenmed Ethekwini Hospital and Heart Centre

Riverhorse Valley Road

Durban, South Africa 4071

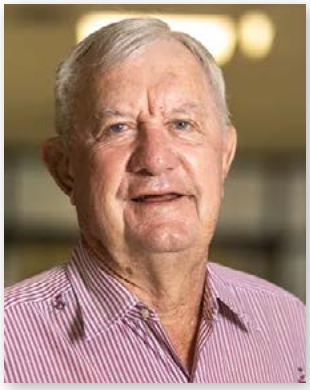
Email:

darshanred@gmail.com

D Reddy https://orcid.org/0009-0001-3868-1695

R Kinsley https://orcid.org/0009-0009-7260-4966

DOI: https://doi.org/10.24170/23-2-8348



INTRODUCTION

Cardiac surgery in South Africa (SA) was thrust onto the world stage in 1967 following Christiaan Barnard's world-first orthotopic heart transplant in Cape Town. This pioneering achievement defined the country as an unlikely leader in daring surgical innovation, clinical excellence and laboratory research.[1] The decades following the first heart transplant launched the speciality on a pathway of surgical excellence, evident by world-class surgeon-leaders and internationally renowned training units.

That stellar trajectory has unfortunately reversed, and the current SA cardiac surgery landscape is characterised by the lack of experienced academic leadership, virtually non-existent training and surgical programmes, and the lack of outcomes reporting and benchmarking in both private and public sectors.

A TRADITION OF EXCELLENCE

In the late 1950s, using a pump-oxygenator donated by the United States government, Christiaan Barnard established the country's first cardiac surgery programme at Groote Schuur Hospital. Although his achievements in the field of heart transplantation are most well publicised, Prof Barnard made immense early contributions to congenital heart surgery, specifically the repair of Tetralogy of Fallot and Ebstein anomaly.[2]

A decade later, Professor Ben le Roux established a world-renown thoracic surgery service at the Wentworth and King George V Hospitals in Durban. Mr Andrew Logan joined the service following his retirement from Edinburgh in 1972, marking the golden years of thoracic surgery training in SA. Prof le Roux's monographs remain some of the most eloquently written texts in thoracic surgery.[3]

Professor Hannes Meyer established the cardiothoracic surgical training programme in Bloemfontein in 1971. This unit developed an excellent coronary artery revascularisation programme, a tissue laboratory and the largest national homograft bank in the country. The research unit was renamed the Robert W.M. Frater Cardiovascular Research Centre in 2015, in recognition of another

outstanding South African cardiac surgeon and researcher. The eponymous Hannes Meyer registrar symposium is held annually as a tribute to his commitment to training.[4]

In the 1980s, the Johannesburg cardiac surgery complex was one of the most productive units in the world, with over 1 000 cardiac cases per year under the leadership of Professor Robin Kinsley. The programme, like the Durban unit, distributed a comprehensive report annually with details of all procedures made, meetings held, training activity and visitors to the unit.

OUR FINEST EXPORTS

During this era, cardiac surgery in SA was an innovative and dynamic environment with titans in the field keen to attend local meetings, such as the South African Cardiac Society (SACS) meeting at the Carlton Hotel in Johannesburg in 1980, the precursor to today's SA Heart® annual meeting. Many South African surgeons expanded their training abroad, establishing themselves as excellent surgeons leading high-profile surgical centres around the world. In the United Kingdom, this included the likes of Donald Ross, who conceptualised and developed the Ross operation and Sir Terence English, a leader in heart transplantation and president of the Royal College of Surgeons. In the United States, Chris Knott-Craig and Hillel Laks are highly revered congenital heart surgeons, and Lars Svensson leads the Heart and Vascular Institute at the Cleveland Clinic, the highest-ranked adult cardiac surgery programme in the country.

CARDIAC SURGERY IN SOUTH AFRICA TODAY

The growth and development of high-volume surgical centres of excellence is consistent across the spectrum of high-income countries such as the United States, Germany and the United Kingdom, to previously underdeveloped low-to middle-income countries (LMICs) such as India and China.

In contrast, the phrase that best describes the state of cardiac surgery in SA today is "a ship without a captain, drifting aimlessly". The most significant factors contributing to this situation are the absence of strong surgical leadership, and the lack of accountability from the relevant role players – these include national and provincial health departments, academic hospital management, university training departments, healthcare funders, the Colleges of Medicine of South Africa (CMSA), the Health Professions Council of South Africa (HPCSA), and the Society of Cardiothoracic Surgeons of South Africa (SCTSSA). The fragmentation of responsibility for service delivery, training and research make it difficult to develop a cohesive, constructive strategy to define and improve the situation.

SERVICE DELIVERY

The national health shift toward primary healthcare necessitated the defunding of state tertiary hospital healthcare services. This destruction of services has significantly hindered service delivery and training in cardiothoracic surgery. Over 80% of the population have no access to private medical care, and the state sector is overwhelmed with the burden of surgical disease in this patient population.[5]

State institutions struggle to deliver appropriate and timeous surgical care to the population due to resource constraints, as is evident from the long surgical waiting lists for routine procedures such as coronary artery bypass grafting (CABG), valve surgery and the correction of congenital heart defects.[6] With diminished surgical capacity, patients present with advanced disease increasing operative risk, and the surgical capacity becomes increasingly crisis-driven.

The situation has reached a disastrous level in paediatric and congenital heart surgery, and no state institution offers comprehensive congenital cardiac surgery.[7] Most provinces offer little to no congenital heart surgery service, and formal referral pathways do not exist for patients to access care elsewhere. Under these circumstances, the waiting list is more accurately a death list.[8] The neglect of congenital heart surgery on the African continent remains a huge challenge, and it is disappointing that SA has been overtaken by other LMIC's such as India and China in this regard.

The lack of funding for specialist surgeon posts, training of specialised nursing, limitations from cardiac anaesthesia and cardiovascular perfusion, lack of consumables and unlimited private practice by specialists have in combination strangulated the potential of many units. The decline of surgical volumes in state hospitals has encouraged an exodus of surgeons to private practice, leaving academic units without experienced specialists.

Many full-time state sector specialists undertake unlimited private practice during normal working hours, leaving trainees without supervision. The general public is well aware of the overall poor service delivery in state hospitals, and the sporadic "dog-and-pony show" type of media release does little to save face, ignoring the multitudes dying on waiting lists every week.[9]

TEACHING AND TRAINING

Academic units are the mainstay of surgical training, and the success of cardiac surgery programmes is highly dependent on surgical case volumes and senior supervision. Prior editorial reflections within the SA Heart® Journal have questioned the trajectory of cardiothoracic surgery training in SA, asking bluntly: "Where to from here?".[10]

The CMSA serves as the sole examination body, and the introduction of internationally derived continuous assessment programmes, together with recalibration of the examination process using education theory is hoped to improve the assessment of candidates.

Revision of the admission criteria to the examination has been necessary, else no graduates would be produced in a country that desperately lacks cardiothoracic surgeons. The admission

requirement to the Fellowship exam of 75 open heart surgery cases as primary surgeon has been forsaken, as most units in the country do not achieve anything close to this. The most advanced assessment models cannot compensate for the inadequacy of training programmes, and instead the process becomes tailored to the candidate that has seen little and performed even less surgery.

Simulation methodology is a useful adjunct to enhance technical skills in junior trainees, but cardiac surgery is a true apprenticeship and there is no substitute for registrars performing surgery under the direct supervision and guidance of an experienced consultant.

Beyond the final Fellowship examination, junior specialists are seldom ready to embark on safe independent practice, and they require a controlled environment with senior support – this is standard surgical practice globally. Without guidance, many surgeons struggle to manage complex cases or complications, and lose the trust of colleagues in cardiology, anaesthesia and nursing due to poor outcomes.

RESEARCH OUTPUT AND OUTCOMES DATA

Most research output from academic units comprise of Masters theses published by trainees, usually begrudgingly as a prerequisite for independent specialist registration. Case reports and small case series appear intermittently, but in the absence of high-volume cardiac surgical units it is unsurprising that few contemporary large data series exist. Our unique intersection of late presenting LMIC pathology and novel and unique surgical techniques have much to contribute to the rest of world.[11-14]

Outcomes analysis and reporting are a cornerstone of cardiac surgery quality assessment. The public reporting of surgical outcomes is mandatory in countries such as the United Kingdom, and patient and surgical outcomes data in the United States are submitted to the Society of Thoracic Surgery (STS) database for national benchmarking. Academic units in the past produced annual reports detailing surgical activity and outcomes, but this practice no longer exists. When concerns regarding poor surgical outcomes appear in the media, in the absence of validated surgical data to the contrary, the reputation of an academic surgical unit may be destroyed.

Private practice

In contrast to the state sector, the private sector is oversupplied with resources, including cardiac surgeons of variable technical proficiency and experience. The proliferation of private cardiac surgery facilities has enticed many new graduates to independent private practice, often prematurely. This is encouraged by private hospital groups and the medical device industry, usually in the interest of profit generation and in many instances a profit-sharing model. Inexperienced surgeons without senior support struggle in an environment that does not tolerate a learning curve of inefficiency, incompetence, and poor outcomes. Under these circumstances, referrals decline and medico-legal troubles brew, and a retreat to diagnostic thoracic procedures is necessary to make a living.

The current fee-for-service private practice model is unsustainable in the long term and has been abandoned by many healthcare systems. Alternatives such as bundled care reimbursement are constantly being pursued by healthcare funders, however poor insight into the complex nature of cardiac surgery makes this challenging. The Health Market Inquiry into private practice in SA highlighted the overservicing of patients, creative billing and fraudulent coding, and cardiothoracic surgery is no exception to this, particularly amongst junior specialists entering private practice.[15]

Surgical outcome reporting is not mandatory in the private sector, and few practices submit data to registries such as the STS database or the World Society of Pediatric and Congenital Heart Surgery (WSPCHS) database, which is cost-free. Efforts by the Society of Cardiothoracic Surgeons of South Africa (SCTSSA) and others to promote national and even regional registries have been unsuccessful.[16,17] In contrast, healthcare funders have a vast quantity of metrics related to reimbursement and can crudely estimate clinical outcomes following surgery. This situation is far from ideal, but in the absence of surgeon-driven data, these remain the only measure of private practice activity. Without self-analysis and benchmarking of surgical outcomes, surgery is conducted in an intellectual vacuum. In a field defined by precision and accountability, the absence of data is itself a form of systemic opacity.

THE FUTURE OF CARDIAC SURGERY IN SOUTH AFRICA

Cardiac surgery in SA is at a critical inflection point, and in many aspects has already fallen off a precipice that will take decades to resolve. We envisage two potential scenarios in the future:

Scenario 1 – The downward spiral

At the current trajectory, cardiac surgery in SA is destined to plummet to the levels of our neighbouring countries in sub-Saharan Africa, where comprehensive surgical services no longer exist in either the private or state sectors.

With the decline in surgical volumes and case complexity at academic units, training will eventually cease and ultimately both state and private sectors will be staffed by foreign-national trained surgeons. Patients requiring cardiac surgery in SA will be completely dependent on visiting mission teams, as is the norm on the continent.

Alternatively, patients will be referred to private hospitals on the Indian subcontinent, another common practice in sub-Saharan Africa. This low-cost option is appealing to both the national government and private healthcare funders when complex interventions in adult and paediatric cardiac surgery, transplantation and advanced device therapies are no longer available in SA due to lack of expertise.

Scenario 2 – Reinventing our legacy

In our view, drastic intervention is required in two specific areas to avoid the collapse of the specialty in SA: Strong leadership in academic units and active private-public integration.

Leadership

One of the crucial factors contributing toward the decline of the cardiac surgery specialty in SA is the failure of leadership and accountability. The surgeon-leader of an academic unit should be a technically competent and experienced individual that has earned the respect of peers and colleagues, and most importantly is present at the coalface. The ability to teach, train and lead a team are required, ideally with an inclusive / servant leadership style. A toxic leadership style leads to the destruction of interpersonal relationships and is ultimately detrimental to a surgical unit.

Private-public integration

The private sector retains substantial surgical capacity, infrastructure, and expertise, while the public sector bears the overwhelming burden of disease with limited resources.

Cardiac surgery as a discipline was once best known for coronary artery bypass grafting. Advances in PCI have driven cardiac surgeons to develop alternative areas of expertise and create centres of excellence in mitral valve repair, aortic valve repair, transcatheter aortic valve replacement, aortic vascular surgery, minimally invasive cardiac surgery and complex congenital cardiac surgery.

Much of this expertise lies in the private sector, particularly the fields of cardiac transplantation, mechanical circulatory support and complex congenital cardiac surgery. The highest volume of heart and lung transplantation exists in the private sector, and complex single ventricle congenital heart surgery is not offered in the state sector.

Trainees should be exposed to the best teachers, wherever they may exist. As no formal training programmes exist in the private sector, registrars are not exposed to the advanced surgical techniques and unique pathologies that are managed in private practice. Every such case is effectively a teaching opportunity lost, and many surgeons in private practice welcome the opportunity to mentor junior specialists in a formalised, regulated, mutually beneficial manner, rather than just as a pair of hands to assist. Similarly, academic units have much to gain from the appointment of senior surgeons from private practice in sessional training positions, particularly if they can offer expertise in specific areas.

The seamless integration of academic training units with private practice centres of excellence is essential for quality training of future generations of surgeons.

CONCLUSION

There is a tendency within SA cardiac surgery to draw reassurance from our proud legacy. The narrative of past excellence—of Barnard, of early innovation, of global leadership—remains deeply embedded in the professional identity of the field. The uncomfortable reality is that legacy has, in some respects, become a substitute for accountability.

Instead, the discipline should be regarded as a pillar of national pride, and all efforts made to restore the former glory in a purposeful manner relevant to global practice patterns. Sophisticated tertiary care specialties such as cardiac surgery and transplantation in general should serve as a bellwether for the national health status, and we believe that by improving services at the apex the "rising tide will lift all boats", including secondary and primary healthcare.

Alternatively, without decisive and visionary leadership the field will continue its gradual decline—losing relevance, capacity, and ultimately, the ability to serve the patients who depend on it.

"The best way to predict your future is to create it"
– Abraham Lincoln

REFERENCES

1. Schewitz I. Cardiothoracic surgery in South Africa: a history. J Thorac Dis. 2022;14(4):1275-1281. https://doi.org/10.21037/jtd-21-1117.
2. Brink JG, Cooper DKC. Heart transplantation: the contributions of Christiaan Barnard and the University of Cape Town/Groote Schuur Hospital. World J Surg. 2005;29(8):953-61. https://doi.org/10.1007/s00268-005-0154-2.
3. Odell JA. Dr Andrew Logan: the passing of a pioneer. Ann Thorac Surg. 2006;82(4):1567-9. https://doi.org/10.1016/j.athoracsur.2006.01.017.
4. Kleinloog R, Smit FE, Neethling WML. In Memoriam: Prof Hannes M. Meyer (1933-2020). SA Heart J. 2021;18(2):82-3.
5. Sliwa K, Zühlke L, Kleinloog R, et al. Cardiology-cardiothoracic subspeciality training in South Africa: a position paper of the South Africa Heart Association. Cardiovasc J Afr. 2016;27(3):188-93. https://doi.org/10.5830/CVJA-2016-063.
6. Zilla P, Bolman RM, Yacoub MH, et al. The Cape Town declaration on access to cardiac surgery in the developing world. Cardiovasc J Afr. 2018;29(4):256-9. https://doi.org/10.5830/CVJA-2018-046.
7. Kinsley RH, Reddy D, Yankah C. The Cape Town declaration on access to cardiac surgery in the developing world: Is it a true reflection of the needs of sub-Saharan Africa? Cardiovasc J Afr. 2019;30(2):74.
8. Kinsley RH. The third Aldo Castaneda lecture: the neglect of neonatal/infant cardiac disease in Africa – continental genocide? World J Pediatr Congenit Heart Surg. 2012;3(2):241-3. https://doi.org/10.1177/2150135111425394.
9. Madiba, XECMO machine used in life saving surgery for young KZN boy. The Mercury. (3, August 2023). https://themercury.co.za/news/2023-08-03-ecmo-machine-used-in-life-saving-surgery-for-young-kzn-boy/.
10. Rossouw G, Janson J. Cardiothoracic surgery training in South Africa: Where to from here? SA Heart J. 2009;6(4):206-8.
11. Reddy D, Kleinloog R, Kinsley R. Pulmonary atresia, ventricular septal defect, and major aortopulmonary collateral arteries: the natural history and late presentation. World J Pediat Congenit Heart Surg. 2025;16(2):203-7. https://doi.org/10.1177/21501351241311882.
12. Brizard CPR, Reddy D. Congenital mitral valve disease. In: Kouchoukos NT, Blackstone EH, Hanley FL, Kirklin JK, eds. Kirklin/Barratt-Boyes Cardiac Surgery. 5th ed. Elsevier; 2024: Chap 49.
13. Moodley K, Msimang M, Maharaj K. The clinical outcomes and histological characteristics of patients undergoing surgery for thoracic aortic aneurysms at a regional referral centre in South Africa. Cardiovasc J Afr. 2025;36(3):294-301. https://doi.org/10.5830/CVJA-2025-038.
14. Reddy D, Kinsley RH. Juvenile rheumatic mitral valve disease: a review of the pathogenesis and morphology with implications for valve repair. Journal of the Heart Valve Society. 2026;0(0). https://doi.org/10.1177/30494826261438351.
15. Solanki GC, Cornell JE, Besada D, Morar RL, Wilkinson T. The competition commission health market inquiry report: an overview and key imperatives. S Afr Med J. 2020;110(2):88-91. https://doi.org/10.7196/SAMJ.2020.v110i2.14455.
16. Yip A, Libhaber E, Nam P, et al. A systematic review of acute thoracic aortic dissections in Africa-the need for a registry. Aorta (Stamford). 2022;10(6):279-9. https://doi.org/10.1055/s-0042-1757797.
17. Yankah AC, Nwiloh J, Mestres CA, et al. The 2025 Accra declaration on upskilling and cost- effective cardiac surgery in Africa. Am J Cardiol. 2026;264:76-83. https://doi.org/10.1016/j.amjcard.2025.09.067.