

# More than 60 years of Organised Trauma Care: The Johannesburg Trauma Unit at Charlotte Maxeke Johannesburg Academic Hospital

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The Johannesburg Hospital was opened in 1923 with a casualty department and wards. It was then known as Johannesburg General Hospital, commonly referred to as “The Gen” by many. In 1960, the Head of the Department of Surgery, Prof. DJ Du Plessis, recognised the need to organise trauma care. He is quoted saying, “A large proportion of the patients arriving in the hospital appear to have suffered traumatic injury,” and thus noted the need to reserve a separate area for the care of these patients.

As a great leader of the time, he paved the way for Prof. AE Wilkinson to go to the Birmingham Accident Hospital (BAH) in the United Kingdom and help to create a separate area for specialist trauma care. The BAH was ahead of its time, having been established in 1941 with the expectation of treating many military injuries. It was recognised as the world’s first centre for specialised trauma care and rehabilitation in 1944, following the recommendations of the British Medical Association’s Committee on Fractures and the Interdepartmental Committee on the Rehabilitation of Persons Injured in Accidents. The hospital had recognised the need to formalise trauma education as part of the care offered. The emblem of the BAH was the heraldic 3-turreted Crusader Castle of St. Barbara, who was the Patron Saint of the Injured.

Prof. Wilkinson studied under BAH Director, Mr P S London and, on his return, established the Johannesburg Hospital Trauma Unit and modelled the unit on lessons learned in Birmingham. The unit opened on the 22nd of October 1962. In recognition of the Birmingham contribution, their castle was incorporated into the famous Johannesburg Trauma Unit emblem but as the Transvaal Ambulance Training College for Paramedic training was under the academic control of the Unit, the Crusader cross was exchanged for the Paramedic Star of Life. The BAH was closed in 1993, but its legacy and impact are embodied in the Johannesburg Hospital Trauma Unit, which is now one of the world’s oldest Trauma Centres.

Initially, the Trauma Unit was staffed by two full surgeons, a surgical registrar, two interns, and occasionally a medical officer. By the following year, the staff had expanded to

include Prof. Wilkinson as head, three full-time consultants (Mr Morris, Mr Gordon, and Mr Green), one part-time surgeon (Mr Muskat) and a full-time orthopaedic surgeon (Mr B Mandell).

Many consultants have served in the unit over the years, but only six heads have led this unit in its 60 years. Prof. Wilkinson led the team from 1962 until 1979, followed briefly by Mr Roy Myers before Mr Hymie Green took over from him later in the same year. In 1985 Prof. Ken D Boffard took the helm until 2001, when Prof. Jacques Goosen led the unit until 2012, when the current head, Prof. Maeyane S Moeng was appointed.

The need to improve trauma care and understanding the relevance of a specialised unit saw the unit expand further to a current staff complement of 34: Head of Unit, five permanent consultants, up to four Subspecialist Trauma Surgery Fellows, five to six surgical registrars, sixteen medical officers and two interns. This growth is in keeping with the expansion of Critical Care beds and a constantly increasing trauma load. A steady flow of visionaries and strong leaders have maintained a high level of trauma academia and kept the Johannesburg Trauma unit on a global scale. Unsurprisingly, the unit has had many international leaders in trauma visiting this centre of excellence over the years.

One of the most outstanding achievements was the association of the unit with prehospital care. The expansion of training services by the Transvaal Ambulance Training College resulted in the establishment of the Ambulance Training College in 1983, which trained the first Paramedics in South Africa. This Training College was under the Academic supervision of the unit. The unit staffed and ran the Flight for Life Helicopter service for the then Transvaal Provincial Administration. It started as a private venture with Rotary International in 1976 and was taken over by the State in 1977. It was based on and named after the “Flight for Life” air ambulance service in Denver, Colorado, which was the only other helicopter service operating at a ground elevation of 6 000 ft (2 000 m) above sea level. The helicopters used were: the Bell 206B Jet Ranger from 1977 to 1982, the Bell

206L Long Ranger until 1985, and subsequently the MBB 117 until 1997, when the helicopter service was taken over by private services.

Over the years, we have seen a growing unit that has maintained an excellent academic standard and an international reputation. The solid academic imprint can be seen in the number of scientific papers published by the unit over time. It has produced more Trauma fellows than other units in the country (nine, excluding four employed by another facility). It has grown with time and adapted to change. It has maintained the tradition of continuum care by being one of the few facilities with an independent Trauma Emergency Department, ICU ward, and Major Trauma ward under the same unit. Retaining surgical expertise in operating on the chest, neck, abdomen, and vascular trauma allows for good general exposure and care.

Resuscitation protocols have continued to evolve over time to match the USA Level 1 Trauma status. All critical ("Priority One") cases are seen in a dedicated area and overseen by a Trauma Consultant who maintains a 24-hour in-hospital presence. This in-house consultant availability is necessary to maintain the quality of care and support the complex patients that arrive at this institution. It remains a unique Unit responsible for its own emergency department area and resuscitations, operating all visceral related torso injuries and managing most vascular injuries including the neck and limbs. Furthermore, it is one of few State Trauma Units with its own dedicated 12-bed Intensive Care Unit (ICU). Due to the significant amount of trauma (> 60 Priority One resuscitations, > 250 acute/ Priority Two Trauma cases per week), acute non-trauma emergency surgery is managed by a separate team or by the general surgeons.

Quality control has been at the core of the unit. Since its inception and long before it became fashionable, Morbidity and Mortality (MNM) meetings have been held regularly on a weekly basis at the Unit. The approach to these meetings has always been open to all healthcare workers and maintained the concept of "if this patient presented again, what would you do differently". This allows for a non-judgemental, non-humiliating approach and offers an atmosphere of transparency. It is one of the first units to incorporate post-mortem reports for educational purposes and quality control. A compulsory weekly meeting is combined with Trauma teaching to maintain standards. Further training is dedicated to undergraduates, registrars, and Fellows on other days. These traditions were laid in the unit decades ago. This exposure to trauma experience and teaching has resulted in invitations to multiple international forums to share our knowledge.

In many ways, this unit has remained ahead of the times. It has set the pace of trauma care and trauma system organisation in South Africa. Its strong international and national academic involvement is undeniable. The unit's leadership role has expanded to assist the hospital with Emergency Preparedness (Disaster management). Over the years, experience gained from many mass casualty incidents related to bus, taxi, and train crashes, stampede and fire incidents, and subterranean explosions has allowed the development of expertise within the unit to handle these events effectively. Expertise gained from managing these events has positioned the unit to share knowledge and experience with other units/departments and influenced regional structures in the country.

From a traditional male-dominated unit, it has transformed into a more representative unit with more female trauma consultants (four of the seven current consultants are female). However, the unit still caters to 80–85% of male patients with significant interpersonal violence. Penetrating trauma has declined to 52% over the years, but gunshot wounds (GSW) still dominate the non-neurological ICU admissions. Like most units, its trauma load is predominantly after-hours, including weekends and holidays. Sadly, a Burns Unit has never been developed for this state facility despite the increased burn load in the country and the desperate need for Burns care beds.

Prof. KD Boffard used this model to develop the sister unit in the private facility, Netcare Milpark Hospital. The Trauma Unit, which opened in 1992 with five beds, has now grown to thirty dedicated ICU beds and eight Burns beds, all of which will be expanded in the near future. The unit has Accreditation as a Satellite Training Centre of the Department of Surgery of the University of the Witwatersrand and is accredited for Postgraduate training of Registrars and Fellows under the Department, by the Health Professions Council of South Africa. This facility has already reached its 30-year milestone. All resuscitations are Consultant Trauma Surgeon driven and the Trauma ICU remains a closed Intensive care unit with clear protocols followed by all disciplines involved. The cooperation with other specialities has allowed for excellent outcomes in the unit. It has maintained the traditions of quality assurance over the years and currently hosts a monthly virtual Trauma Audit and Grand Rounds meeting. This meeting has gained global recognition, due to its national and international moderation and the high quality of the multidisciplinary presentations, as evidenced by over 150 global attendees at each session. (A similar adoption of the system was done by Prof. E Degiannis in reorganising trauma at Chris Hani Baragwanath Academic Hospital)

The Trauma Unit at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) remains a centre of excellence despite the ongoing challenges related to the current state of healthcare services. Like most state institutions, shortage of nursing personnel has worsened since the COVID-19 pandemic. The luxury of having a stable medical officer pool who could rotate in the unit over 12–24 months, has dwindled. Current medical officers stay an average of 6 months without attaining excellence in their resuscitation standards. The infrastructure challenges and recent fire incident have reduced bed availability, further delaying emergency department disposition of patients. Current POPI Acts makes it difficult to video the resuscitation for ongoing quality control, unless no identification is possible.

Our hope is that this Trauma model, with minor adaptations, could be part of every teaching institution to maintain the standard of Trauma care within the different regions. The unit has shown that it is possible to set the pace of trauma even in a low-middle-income environment. It is time to expand the model to accommodate the realities of volumes and service constraints seen in our environment.

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### ***Conflict of interest***

There are no conflicts to disclose.

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