

Evolution of Intensive Care Medicine in Singapore

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Singapore is a founding member of the Western Pacific Association of Critical Care Medicine (WPACCM). We hosted the Inaugural Congress of the Association in 1981. From 29 November to 3 December 2000, we played host once again for the 11th WPACCM Congress. The theme of that Congress was "Critical Care: Challenges in a New Era". It attracted 853 delegates from 35 countries. The success of this important regional critical care meeting heralds the evolution of Intensive Care Medicine (ICM) in Singapore into a new era. It is also timely for us to reflect on the evolution of ICM in Singapore and consider the challenges facing this young speciality.

Before 1970, there was no centralised intensive care area, nor dedicated medical or nursing personnel and a dire lack of equipment for the critically ill patient in hospital.¹ The commencement of open-heart surgery in 1967 was apparently the main driving force for the establishment of a "vigorous Post Basic Intensive Care Nursing Course" in 1969. This illustrated the important role trained nurses play in the care of the critically ill. It also underlined the importance of planning for appropriate intensive care services as part of the overall set-up when instituting new forms of sophisticated medical or surgical therapy. Chia² provides us a glimpse of what an intensive care facility looked like before 1970 (Fig. 1). In those early days, there was also a literal cry for paediatric intensive care facilities, as expressed by Loh,³ "There is no doubt that facilities for paediatric intensive care are badly needed and should be developed as soon as possible".

In the 70s, a portion of some general medical and surgical wards in the public hospitals was designated "intensive care unit (ICU)" to meet the need for centralised intensive care services. This was a substantial improvement in physical arrangements (Fig. 2).⁴ However, it was a somewhat cluttered environment with associated infectious disease implications.

In the 80s, ICUs were developed along speciality lines.

Physical space, equipment and trained nursing staff were more or less in place. The "open unit" model of patient care and unit administration was the practice of the day. The admitting clinician was responsible for the care of the patient and his discharge from the ICU. Multiple referrals to organ or system based specialists was the norm. Co-ordination of management of the ICU patient was often left in the hands of the rotating junior medical staff who often had to juggle their ICU responsibilities against major obligations in the general ward and outpatient clinics. No one was responsible for resource allocation and triage. Admission to ICU was on a "first come, first serve" basis. With "open unit" model, a holistic management plan for the individual critically ill patient and consistency in unit management were both lacking.

The building of new hospitals and upgrading of old hospitals in the public sector over the past 20 years provided the opportunity for ICUs to be redeveloped. Entire floor areas are assigned to ICUs. Surgical ICUs are often located adjacent to the operating theatre suite. There is sufficient space to permit single-bedded cubicle design in many units (Fig. 3). This allows for a certain degree of patient isolation to address concern over dissemination of microbial agents.⁵ It also provides some degree of privacy and dignity for the helpless critically ill patient. Space is also allocated for staff facilities like offices, rest areas, meeting rooms and tutorial rooms. Many ICUs also have an adjoining visitor lounge with sofas and amenities such as television, reading materials, vending machines that dispense drinks and snacks. Koay and Fock⁶ provide an insight into the planning and design of one of these new ICUs (Fig. 4).

Our technology and equipment are comparable to any good ICU in other parts of the world. Foreign delegates attending the 11th WPACCM Congress visited Tan Tock Seng Hospital's ICUs. Being an international reference centre for Datex-Ohmeda's Critical Care Physiological Monitoring System, the purpose of this visit was to showcase our state-of-the-art facilities and set-up.

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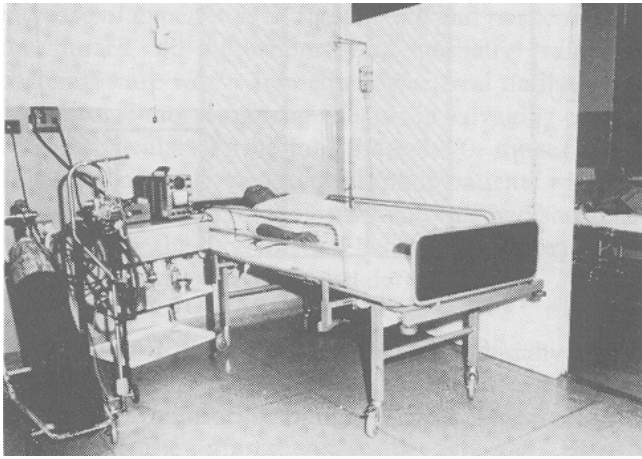


Fig. 1. Two-bedded coronary care unit in old Singapore General Hospital, 1967.



Fig. 2. Physical arrangement of Surgical ICU in old Toa Payoh Hospital, 1970 to 1980.



Fig. 3. Single-bedded cubicle design of the surgical ICU, Changi General Hospital, 1990s.

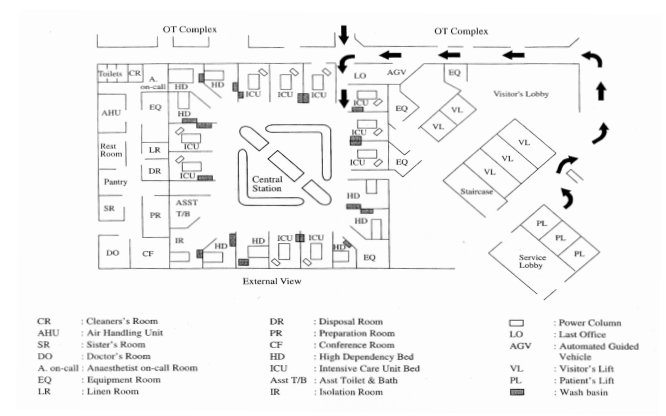


Fig. 4. Physical layout of the surgical ICU, Changi General Hospital, 1990s.

As for ICM medical manpower, at least 30 doctors have returned from 6-month to 2-year hands-on training in various world-renowned ICU centres over the past 10 years. These trained ICU doctors comprise a good mix of anaesthetists, pulmonologists, internists, paediatricians and neonatologists. Several of these doctors have satisfied criteria set by the European Society of Intensive Care Medicine (ESICM), successfully completed a 2-part examinations and been awarded the European Diploma in Intensive Care (EDIC). Two of these doctors have also been accorded honorary fellowship of the American College of Critical Care Medicine (FCCM), in recognition of their leadership and contributions to the specialty in Singapore as well as the Western Pacific region. In our local context, pending a formal accreditation process for intensivists, we can perhaps regard these doctors as “intensivists” if they continue to apportion a substantial portion of their clinical time to the practice of ICM.

Over the last 10 years, there is a noticeable paradigm shift towards the “closed unit” model of patient care and unit

management. This is no doubt a result of a drive towards efficient delivery of expensive health care services, cost containment and increasing consumer expectations.⁷⁻¹⁰ Today, “intensivists” direct many of the ICUs in our public hospitals. To a large extent, the “intensivist” determines admission, manages the critically ill patient in the unit and determines discharge. Instead of organ targeted therapy, the “intensivist” provides holistic management of the patient, treating him as a complete individual. Organ specific specialists may still be consulted and their inputs are considered within the overall management plan for the patient. Most “intensivists” covering the ICU have no other conflicting clinical duties so that they are immediately available to attend to any critical event in the unit during office hours. However, many internists covering the ICU have to continue to apportion part of their clinical time to outpatient clinics. Outside office hours, the “intensivist” remains available on call by pager from home in case he needs to be consulted. Being well versed in the patient’s overall condition and by virtue of his training, he is in the

best position to advocate the patient's interest. He is best able to recognise when treatment is futile so that aggressive and costly therapy may be withheld or withdrawn.

The multidisciplinary ICM fraternity in Singapore recently published the *Bedside ICU Handbook*.¹¹ This was launched at the 11th WPACCM Congress. It serves as a quick reference guide for ICU doctors in their mammoth task of caring for the critically ill patient. The warm reception to this Handbook by local as well as regional doctors reflects the coming of age of ICM in Singapore.

In the words of Fisher,¹² "the impact of intensive care on healthcare was not so much in the improvement in survival in a few conditions but in the increased range of diseases it made treatable, and in particular the increased range of surgical procedures it made possible." Over the last 12 years, ICM in Singapore has in no small way contributed to the development of solid organ transplantation, sophisticated neurosurgery and open-heart surgery, paediatric surgical subspecialties and various other cutting edge medical therapy. The courage and the ability to successfully undertake the 97-hour marathon operation to separate the pair of Nepalese Siamese twins, Ganga and Jamuna,¹³ reflects the belief in the high standard of our paediatric intensive care services in Singapore. After all the glory and excitement of a technically successful surgical operation, the next vital step to success lies in the hands of our capable paediatric intensive care team.

We agree with Dobb,¹⁰ immediate past President of WPACCM, that ICM "can look forward to a future of growth, increased academic and professional standing and professional satisfaction for those in its practice". The leading article¹⁴ that follows this editorial addresses the challenges that the specialty of ICM in Singapore faces as we enter a new era. Evidence-based protocols and practice guidelines must take precedence over age-proven and time-honoured practices. We will also need to continually audit ourselves as well as benchmark our practice against comparable ICU centres worldwide. Finally, we need to address in a more definitive manner the multiple ethical

issues that the intensivist wrestles with on a daily basis – triage of admissions, what constitutes futile care, withholding and withdrawal of inappropriate therapy in the face of futility and "Do-Not-Resuscitate" orders.

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