

**Central Zone Medical Issues Group - Critical Care Subgroup
Report On Bundaberg Intensive Care Services**

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Background

Bundaberg Base Hospital serves a town population of 45,000 people with another 35,000 living in the surrounding district. The Hospital operates approximately 100 acute beds and has recently benefited from a major capital works program. There are two private hospitals in Bundaberg, of approximately 40 and 80 beds apiece, but with no ICU/HDU facilities.

There are two full time general surgeons at Bundaberg Base Hospital - one with a special interest in urology, and who performs ERCP's for the Fraser Coast and Wide Bay area. They each have three operating sessions per week. The recently retired medical superintendent, Dr Thiele, does one session per week of elective vascular procedures and on average performs one other emergency case each week. There are three other private general surgeons in Bundaberg. Recent personnel changes have detracted from the orthopaedic service, which should soon be running again with 1.5 FTE staff specialists. There are currently no ENT, ophthalmological or neurosurgical sessions, although plans for the former two specialties are in progress.

There are two full time staff anaesthetists, and Dr Wakefield performs the dual role of Director of both Anaesthesia and ICU. A hospital SHO on a 10-week rotation is rostered to the ICU during weekdays from 8am-5pm, although they may be absent through fatigue leave from other overnight on-call duties. Two SMOs provide additional support for the anaesthetic service, with a local GP anaesthetist employed for 5 sessions/wk. There is only one other specialist anaesthetist in Bundaberg, who is currently fully committed to private practice, and several other GP anaesthetists, also in private practice.

Junior medical staff and one SMO currently staff the Emergency Medicine Department, although a position for a qualified Director has just been advertised.

One full time and one VMO physician provide medical services. The current Director of Medicine currently provides 5 sessions per week as a general physician, performs one endoscopy list / week, and some additional procedures, although not echocardiography. The full time staff physician provides general and renal services for the hospital, as well as attending the Hervey Bay renal unit for 2 days a week. As these are the only physicians currently in Bundaberg, the VMO physician is also heavily committed to a busy private practice. An additional full time specialist is hoped to commence in July, in the position of Director of Medicine.

The full-time obstetrician provides services for approximately 900 deliveries/yr at the Base Hospital. There are 2 private obstetricians who provide services for another 300/yr

at the private hospitals. The two local paediatricians provide neonatal support, together with general paediatric services.

A hospital pathologist supervises the laboratory area, while a private radiology practice fills 5 VMO sessions for radiological procedures and reporting. The Hospital has recently installed a spiral CT scanner - previously the only CT in Bundaberg was located off site at the private practice. There can be difficulties in obtaining timely radiology reports after hours. The radiographer is on call after 10 pm weekdays and 5 pm weekends, as is the pathology technician.

Intensive Care Infrastructure and Logistics

The ICU operates as a combined unit with coronary care, from a physical, nursing and junior medical staffing perspective. The recently completed combined unit offers 8 beds, of which 5 are currently funded and operational. There are an appropriate number of service outlets in each bay, and six of the eight bays have service columns located adjacent to the beds, while the remainder have services available from the back wall. The bays are significantly undersized at approximately 16 square metres, although the single isolation room is larger and includes a toilet/shower facility. New Datex™ monitors have been installed throughout and there are two PB 7200 and one PB 740 ventilators. The unit has its own ABL blood gas and biochemistry machine. Interestingly, there is separate eight-bed CCU on the floor above, complete with monitoring equipment, that has not been commissioned.

The two staff anaesthetists currently provide the senior staffing for the ICU. Junior staffing during weekday business hours is provided by the hospital PHO, who then hands over at the end of the day to the Medical PHO/Registrar on call for the night or weekend. There are 3 ward rounds a day with the senior medical staff.

The combined unit is supported by 13 FTE registered nurses, with a small additional number of casual staff. Most are thought to have some critical care qualification and prior experience. The current CNC is in an acting position, pending advertisement of the position. There is one six-month training position consisting of self-directed learning packages with peer support and tuition. The presence of more than two ventilated patients at any one time clearly presents a major burden for the existing staff, who work additional overtime and shifts if this situation persists, in order to provide the required 1:1 nurse: patient ratio. This in turn provides an additional cost burden for the Hospital.

Intensive Care Service Provision

Historically, this was an "open" unit, with patients admitted on an ad hoc basis, sometimes at the behest of senior nursing staff for nursing dependency issues. Patients were variably under surgical, physician, or anaesthetist management - sometimes simultaneously with the expected confusion and conflicting orders for the nursing staff. Six months ago the unit converted to a "closed unit" policy, with all admissions coordinated and managed under the staff anaesthetists. Although the Director of

Medicine felt unable to participate in the on call roster following this change, the other hospital departments seem comfortable with this arrangement and recognise an improvement in service levels. The staff anaesthetists have pursued an appropriate policy of early and frequent consultation with other specialties.

The combined CCU/ICU has a little under 1,000 admissions per year, of which approximately 350 are ICU/HDU patients. These are thought to comprise approximately 100 elective post-op patients, 100 overdoses, and 150 other medical and surgical patients. There is currently no means of effectively assessing the acuity of the case mix, and activity data comes from the unit admissions register.

Utilising available data based on nursing requirements from the "Trend-Care" system, there is an average, over the last 3 years, of 20 ventilator days for the whole unit each month. It seems that just under 100 patients are ventilated each year, and the average duration of ventilation is probably between 1.5-2.0 days. Given that there are several patients who receive prolonged ventilation of 2-3 weeks, the majority of patients seem likely to be ventilated for 24 hours or less. There is no marked increase in activity over recent years, although there are some year to year variations, and there is no data available on patient refusals or transfers.

Conclusions

1. The staff anaesthetists, nursing staff, and the Hospital executive are to be complimented on the commitment that they have demonstrated in elevating practice standards and providing a sustainable basis for the service.
2. The transition to a closed unit policy has been appropriate for the best coordination and provision of patient care, and the future management of the service.
3. The lack of an appropriately skilled individual rostered exclusively to the ICU after hours is a serious shortcoming that may, on occasions, compromise patient safety. This situation may also arise intermittently during business hours when both anaesthetists have theatre commitments and the SHO is unavailable through fatigue leave or other contingencies. If intensive care services are to be provided, then a medical practitioner must be available at all times, and consultant support must always be available (FICANZCA, Minimum Standards for Intensive Care Units, IC-1, 3.2-3.4).
4. There is a wish to develop the service, with the relevant expertise and infrastructure, to provide increasingly sophisticated levels of care and organ system support. However, such aspirations are neither in keeping with the patient caseload nor the infrastructure and other services provided by the Hospital. The existing and projected caseload would not justify the major additional investment to operate the ICU as a FICANZCA/ACHS Level II unit. Patient safety and clinical requirements dictate that the care of patients with multisystem organ failure or prolonged ventilation should be practised in a secondary or tertiary referral centre. Occasional experience with higher

acuity patients is not an appropriate way of maintaining clinical expertise or justifying the retention of these patients.

5. However, some modest increases in personnel would ensure that the ICU was able to continue to care for appropriate patients in an extremely safe and proficient fashion as a Level I unit. The unit should focus upon providing a high level of expertise to HDU and short-term ICU patients, including medical and surgical patients requiring less than 24 hours ventilation. A better defined referral and support network would facilitate this process.

Recommendations

1. The ICU should operate two ventilator capable beds and two additional HDU beds, comprising four beds in total. It is strongly recommended that any patients who are likely to be ventilated for more than 24 hours should be retrieved to a higher level facility. The existing three ventilators are suitable for operating two ventilated beds, as this allows for scheduled services and unscheduled repairs, with a disaster/contingency reserve.
2. ICU senior staffing should be increased, with a quarantined fraction of several staff specialist positions dedicated to intensive care services. If a staff anaesthetist, physician, or emergency medicine specialist can be recruited with an ICU qualification, this would be a major advantage to the service.
3. Under usual circumstances a dedicated 1.0 FTE staff specialist with appropriate specialist support for after-hours would be required for a Level I unit. However, a total of 0.6 FTE's of staff specialist time would be a reasonable minimum requirement for the Bundaberg ICU, in recognition of the large HDU component of the casemix, and the occasional absence of any ICU activity. This could, for example, comprise the Director of Anaesthesia & ICU for 0.3 FTE (1 session administration, 2 sessions clinical), with an additional 0.3 FTE distributed between three other staff/VMO specialists (1 clinical session each). Each ICU clinical session should be separate from anaesthetic sessions or non-clinical sessions. This would permit the bare minimum of daytime senior staff availability together with some provision for administration, education and policy development.
4. It is essential that at least four senior staff be available to provide a sustainable after hours call roster, including annual leave requirements.
5. Junior staffing rosters should be re-examined to allow the immediate availability of a suitably skilled doctor to the unit at any time after hours and to ensure that the daytime SHO remains available every weekday.
6. Nursing establishment should be increased if necessary and maintained at a level commensurate with these activities. The lack of any requirement to provide for long

term ventilation, or the short term ventilation of more than two patients, should alleviate the these workforce issues to some extent.

7. Participation in telemedicine nursing education should be encouraged. As additional components of the QH Critical Care Nursing Strategy are implemented, such as staff exchanges, then these should also be made available to Bundaberg ICU staff.
8. Nambour ICU is the most appropriate retrieval centre for Bundaberg referrals, offering the potential for patient transport by helicopter while minimising subsequent social displacement. Virtually all sub-specialty services are available there, with the exception of neurosurgery. However, they are currently operating above their current capacity until additional beds become available at the end of 2001.
9. The RBH should therefore perform the referral and support functions, for the next 12-18 months, utilising its current bed capacity and telemedicine resources to best advantage. Retrieval to RBH will be by fixed wing transport, as is currently the case.
10. In order to facilitate clinical and educational development of the Bundaberg service, increased utilisation of telemedicine facilities is highly desirable. The Bundaberg PHO, joined by senior staff when available, perhaps together with other junior staff from DEM, Medicine and Surgery, should be strongly encouraged to participate in the Tuesday morning registrar tutorials that are coordinated by the RBH and Nambour.
11. Regular scheduled telemedicine ward rounds or case conferences, preferably on a weekly basis, should be encouraged at a senior staff level. This would promote common clinical approaches and a high level of liaison with the supporting referral centre. Telemedicine facilities should also be utilised as required for clinical purposes on an emergent basis.

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