ICU MANAGEMENT & PRACTICE

ICU Volume 7 - Issue 1 - Spring 2007 - Country Focus: Australia

The Major Challenges Facing Australian Intensive Care Over the Next 10 Years

Author

Dr Arthas Flabouris, FJFICM

Staff Specialist

Intensive Care Unit, Royal Adelaide Hospital

Clinical Lecturer, University of Adelaide

Adelaide, Australia

aflabour@mail.rah.sa.gov.au

This article outlines some of the challenges and opportunities for the Australian intensive care environment for the next 10 years.

Introduction

Significant gains are expected from current and future progress in genomic, protenomic and stem cell research and technology. These gains will have a significant impact upon intensive care medicine. There is a strong general public expectation of what such advances will achieve, especially in terms of survival and quality of life. Intensive care has, and will continue, to come at a large financial cost (Higlett et al. 2005). Managing public expectations and promoting the reality of what intensive care treatment can offer within a financially austere environment will be an important future challenge.

Clinical Developments

So far, progress has occurred via small, incremental steps. There have also been failures. We have had to re-evaluate some of the basic principles upon which intensive care has been established - that is, not all therapies that improve physiological measures improve survival, and physiological surrogates of success may not reflect improved patient outcome. Examples of areas in which we have had to better examine our practice include: measures to achieve supra physiological oxygen delivery (Hayes et al. 1994), growth hormone administration (Takala et al. 1999), nitric oxide synthase inhibitor (Lopez et al 2004), deep and prolonged sedation (Kress et al. 2000), use of dopamine (Bellomo et al. 2000), albumin (SAFE 2004) and excessive blood transfusion (Hebert 1999). In part, this has resulted from national and international collaborative research both within our specialty and in conjunction with other medical disciplines (ANZICS website). The next 10 years will see an increase in such activity and more robust and timely research output. These and other factors will also continue to change our stance from being "closed" units to intensive care units (ICUs) "without walls" through the advent of high dependency units (Boots et al. 2002), outreach services (Esmonde et al. 2006) and rapid response teams (Hillman et al. 2005).

There will be significant changes in the ICU patient case mix. Drug development will improve the success of treatment for conditions such as haematological and other malignancies, serious infectious and autoimmune diseases. Fewer such patients will be excluded from the ICU because of poor prognosis. Death from coronary artery disease has decreased, affluence and ageing will be accompanied by an increase in morbidity from cardiac failure, diabetes, cerebral vascular accidents, degenerative joint disease and obesity (Australian Health and Ageing Factbook 2006), adding to the current complexity in which acute illness may arise. The life expectancy of women and men in Australia will be 86-87 years and 82-84 years, respectively by 2026 (Australian Bureau of Statistics website). Public hospital patient case mix will change. Over the last 6 years, acute public hospital admissions have increased by 11%, largely due to a rise in acute medical care, whilst admissions for surgical procedures have decreased and overall occupancy increased (Australian Health and Ageing Factbook 2006). Finally, the existing demand for organ procurement and transplantation will continue to escalate whilst the direction of public debate on stem cell research steers the future of tissue transplantation (National Health and Medical Research Council website).

Public health and prevention will be key future strategies. New vaccines will reduce or even eradicate certain diseases. Prevention of events such as ICU admission and exposure to futile ICU treatment, by identifying at-risk patients will become an increasingly important aspect of intensive care practice. Output from epidemiological, genomic and protenomic research, combined with current clinical initiatives such as outreach, rapid response and patient choice teams will lead to improved identification of at-risk patients.

Business Developments

Public expectation is largely influenced through the filter of public media, and not medical peer reviewed information. Media reports that overstate medical breakthroughs and over-emphasize contradictions in medical understanding widen the publicclinician information gap, promoting on the one hand confusion, and on the other distrust, frustration and protective practices that deviate from what is suggested by the available medical evidence. There continues to be insufficient coordinated and objective debate surrounding these issues. The future will see a greater engagement by ICU staff directly with their “consumers” and a closer alignment with palliative care services to better deal with these issues.

ICUs are already at high capacity of 85% and staffing levels below desirable levels (Higlett et al. 2005). The current “war-on-terrorism” changes in the natural environment, globalization of trade and population place Australia at threat of chemical, biological, radiological and pandemic viral disease. Such episodes could cause enormous, if not unsustainable, pressure on maintenance of existing intensive care services, as staff balance the fundamental values of equitable allocation of resources, patient autonomy and safety.

Finally, the distribution of the Australian population is changing. Urban population density is increasing, and rural areas, though less densely populated, are geographically diverse (Australian Bureau of Statistics website). This will challenge the equitable delivery of intensive care services across the entire population and the need for patient transport services, especially medical retrieval. In the urban environment, there will be a trend towards geographical concentration of ICU services into fewer and larger ICUs and acute hospitals.

Technological Developments

The ICU will remain a highly technology-dependent, data-rich environment. Exponential increases in computer processing power will allow for more compact and cheaper processing power and the expanded use of portable ultrasound as a diagnostic and monitoring tool (Lee 2000), portable radiology (Maher et al. 2004) and development of neural networks related to minimizing adverse events, measuring ICU quality, illness detection, treatment choice and monitoring (Bates 2000; Garg et al. 2005; Huang et al. 2006). Mechanical organ support, particularly mechanical ventilation (McMullen et al. 2006), would be more adaptable to individual patient physiological variation through enhanced processing of physiological measures, improved algorithms and more responsive mechanical output. As intensive care services become increasingly centralized, technology that supports telemedicine and remote monitoring will be more common (NSW Telehealth website; Rosenfeld et al. 2000). Adaptation of newer technology will be concentrated amongst the larger, centralized ICUs. Adaptation of new technology will be tempered by financial constraints and balanced with measurable patient benefits, other than just physiological improvements.

Summary

The intensivist of the future will require exceptional clinical, managerial and business skills. Decisions relating to patient selection and new technology in a financially austere environment will be more frequent and demanding than before. Clinical, teaching and research time will erode. Professional satisfaction will constantly be threatened. The intensive care community will take a stronger control and command of their environment and garner greater influence within acute hospitals as the severity of illness of the general acute hospital patient population increases. There will be greater ICU accountability and engagement with the public and with complimentary and competing health services. Such collaborations will lead to further clinical, organizational and professional achievements and a better preparation of our future leaders.

Published on : Thu, 15 Aug 2013