

Ageing Population

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The Future of Critical Care: The Human Capital

This article will focus on the non-clinical, human aspects of critical care, namely the patient and the ICU team. The modern concepts of humanising ICU care, the healing environment and future-proofing the ICU team will be discussed.

Introduction

Despite being a relatively young specialty, critical care has made remarkable progress since its inception during the polio epidemic in Copenhagen in the 1950s. Though the iron lungs and medical students ventilating patients via tracheostomies have been replaced by modern ventilators complemented with other extracorporeal devices such as haemofilters, cardiac and lung support devices, the intensive care unit (ICU) remains the place where we care for the sickest patients.

Through a series of articles in this journal, colleagues discuss several aspects of critical care. Whilst our improved scientific knowledge will provide the basis for future therapies, these interventions are likely to gradually evolve rather than undergo abrupt major advances (Vincent and Creteur 2015). Rather, we anticipate that it will be the evolution of holistic care delivery which drives improvement in patient outcomes, with the emphasis on quality of care (**Figure 1**).

'It is not what we do, it is how we do it.'

This article will focus on the non-clinical, human aspects of critical care, namely the patient, who is central to all our endeavours, and us, the ICU team. In particular we will consider the modern concepts of humanising ICU care, the healing environment and future-proofing the ICU team. Given

the breadth of topic, only select aspects will be discussed.

Humanising ICU Care

The average human lifespan is increasing, with obesity and lifestyle-related illnesses becoming more common. 'Frail' patients are undergoing more complex and invasive procedures; medical advances have led to novel surgical procedures and chemo/immunotherapy agents for previously untreatable illnesses. These changes are reflected in the hospital and ICU patient population, with ICU admissions of longer duration and involving more complex management.

Sometimes, we lose sight of the human being behind the machines, paraphernalia and clinical syndromes. Dehumanisation tends to creep in, and can occur in many forms, including the loss of personal identity, control and privacy, all of which are significant stressors for the patient. To counter this, 'Humanising the ICU' is a relatively recent cultural swing in critical care based on a range of patient-focused behaviours and environment-related measures (**Figure 2 and 3**) (Wilson et al. 2019).

Simple measures to promote understanding of the patient as an individual and provide reminders to facilitate interaction e.g. appropriate use of glasses, hearing aids or communication aids are important.

WHAT DO WE MEAN BY Quality Healthcare?



Figure 1: Quality Healthcare. Source: aquanw.nhs.uk/membership/delivering-high-quality-care.htm

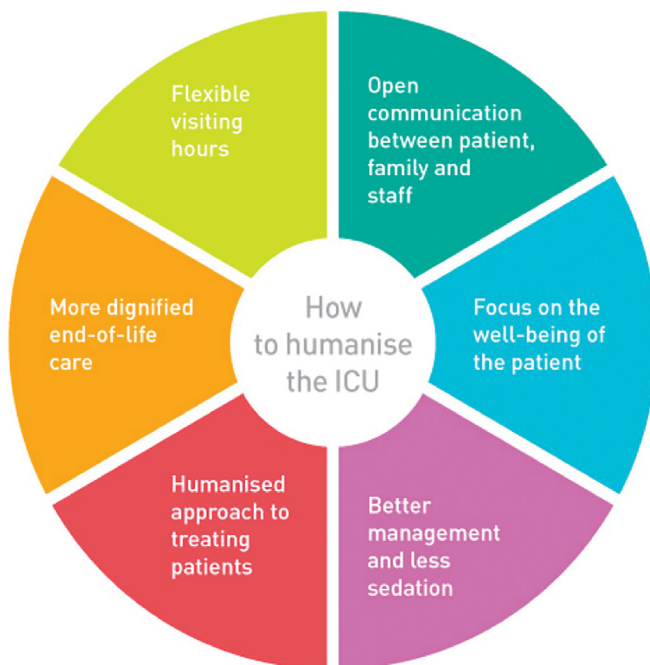


Figure 2: How to humanise the ICU

Helping the patient participate in basic self-care encourages feelings of independence and control.

Communication with patient and family is frequently challenging for various reasons, including complexity of illness, limited retention of facts and fragmented care. Multi-source input ICU diaries are increasingly recognised as a relatively inexpensive intervention to orientate and empower the family to actively communicate and support patient care, whilst helping ICU professionals identify areas requiring improvement and/or resources. Studies looking at the effect of ICU diaries on post-traumatic stress disorder have shown mixed outcomes (Jones et al. 2010; Garrouste-Orgeas et al. 2019). The implementation format, patient selection criteria and follow-up period still require further investigation. Despite this, future efforts to improve patient and family wellbeing will likely be embedded in open, transparent dialogue to help the patient make sense of the ICU experience with early family engagement in this process.

As more patients survive ICU admission, the scale of Post-Intensive Care Syndrome (PICS) and its crucial role in functional outcomes are becoming a stark reality - physical and neuropsychological (non-physical) debilitation can persist for years, with profound long-term effects on patients and carers (Rawal et al. 2017). The ABCDEF bundle consists of elements which individually and collectively reduce long-term consequences of ICU admission, improving functional outcomes (Marra et al. 2017). Early multidisciplinary rehabilitation during ICU admission, while the patient is on life-support therapies, may reduce physical and mental health impairments associated with PICS (Parker et al. 2013). Post-ICU clinics and survivor peer groups can identify patients requiring further support, although there are few evidence-based interventions for PICS.

Approximately 30% of family members can develop neuropsychological symptoms similar to PICS, often related to the severe

Dehumanisation of ICU Patients

- Loss of identity (and appearance)
- Loss of ability to communicate
- Loss of ability to advocate for oneself
- Loss of family presence
- Loss of control
- Loss of respect
- Loss of modesty/privacy
- Purposeful exploitation (e.g. for research)



Humanising Behaviours

- Unrestricted family visitation
- Knowing the patient as a person (non-medical facts)
- Physical touch (e.g. holding a hand)
- Communicate with the patient (not just about or above the patient)
- Common courtesy communication, especially to delirious/ comatose patients (introduction, explanation of what is about to happen, permission to touch)
- Attending promptly to patient needs
- Individualising communication modalities
- Giving patients some locus of control of their environment
- Use eyeglasses, hearing aids, dentures as feasible
- Personal hygiene (hair care, oral care, etc.)

Figure 3: Humanising and Dehumanising of ICU Patients

stress of having a critically ill family member and being involved in difficult decisions etc. Such families are less able to support and care for the ICU survivor, with wider repercussions on society. We anticipate that efforts and resources will be directed towards prevention and screening of ICU survivors and family members for PICS, with early referral for comprehensive multidisciplinary follow-up to support their recovery.

In some situations, preservation of life at the expense of quality of life is inappropriate. The challenge with end-of-life decisions is often identifying the point at which to stop futile measures. We believe the traditional paternalistic approach to clinical decisions will soften as we turn our focus to what really matters to the patient. Advance directives or discussions with family about the patient's values and preferences will provide guidance in the absence of capacity. End-of-life care can have significant impact on the family as well as the healthcare professionals involved. Timely involvement of palliative care specialists and support for the family at this time, as well as follow-up after bereavement are important; a good death

can be a good outcome.

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The Healing Environment

Traditional ICU designs prioritise functional and logistical issues of clinical care. Restricted visiting hours, immobility and lack of privacy have been cited as significant stressors during ICU admission, compounded by environmental stressors e.g. unfamiliar and uncomfortable environment, machine alarms and light levels (Gültekin et al. 2018). Prolonged ICU admissions continually

erode the emotional and psychological reserves of patients and families.

Excessive ambient noise and light can lead to sleep disturbance and delirium, both of which are common and often co-exist in ICU patients (Cavallazzi et al. 2012). Sleep deprivation has physiological consequences including altered immune, metabolic, endocrine function, as well as effects on psychomotor performance and mood (Watson et al. 2012). It is considered a potentially modifiable risk factor for delirium which, apart from its association with increased morbidity, mortality and length of stay, is also a significant risk factor for PICS (Rawal et al. 2017).

A humanised ICU environment prioritises comfort for the patient and family, with essential clinical care designed around them. The patients are no longer nursed in bays - individual rooms provide privacy and space for visitors; visiting hours are much less restrictive to engage the family in care and support for the patient. There is emphasis on natural light during the day and limiting ambient noise. The clinical feel of the ICU is tempered with decorative art and streamlined medical equipment. An innovative example of this is presented by the consciously-designed critical care unit at King's College Hospital. Here, the patient has control of the environment, turning the bed to take in views of a park, accessing music/films and communicating with loved ones utilising monitors as video-call screens. A fully-equipped rooftop garden makes it possible for patients to be wheeled outdoors to enhance the recovery journey. The design process incorporates feedback from previous ICU patients and addresses common important issues raised, creating a healing environment for rest and recovery.

Future-Proofing the ICU Team Staff wellbeing

The ICU environment is demanding, with difficult decisions frequently made under time pressure. Burnout is common in critical care, with a prevalence of 30-60% in ICU

professionals (Chuang et al. 2016). It did not gain prominence or invite open discussion until recently, partly because healthcare professionals are expected to be impervious to it. Crucially, burnt-out healthcare professionals are often high-functioning individuals who would have originally contributed substantially to workplace morale, productivity and improvement - the impact of burnout extends beyond the individual to affect the patients, hospital and healthcare system (Brindley 2017). In particular, desensitisation to the human aspects of patient care, which occurs as part of burnout, is counter to the goal of humanising the ICU.

The manifestation and course of burnout are variable, subjective and frequently underreported. There is no quick fix and therefore, as with most things, prevention is probably better than cure. Burnout occurs as a result of internal and external factors. Its management requires the individual to self-care, self-assess, report and seek help as appropriate but realistically, a significant part of the responsibility of burnout prevention lies with the employing organisation. Efforts to prevent burnout tend to be positive interventions that promote staff awareness and wellbeing, reinforced by strong leadership that recognises hard work, supports those that are struggling and actively listens to its employees. Several professional societies such as the Society of Critical Care Medicine and American Thoracic Society now prioritise and actively campaign for physician wellbeing. 'Resilience' is oft-quoted as the most desirable characteristic in NHS workers nowadays; resilience training is increasing in demand within NHS leadership circles (Lake 2016). This may represent the first step to make this resource widely available for healthcare workers. Borrowing from lessons learnt in other industries, a happy workforce is a high performing one and more likely to go above and beyond their specified duty (Seppälä and Cameron. 2015).

Competent management of burnout

can help reduce staff illness and turnover, enabling trained professionals to successfully remain in their chosen specialty. Since staffing is the most expensive resource in healthcare settings, the cost savings, though hard to quantify, will usually be significant.

Assembling a Multidisciplinary ICU team of the Future

Caring for the critically ill patient on ICU is the epitome of multidisciplinary teamwork. There is a move away from the hierarchical structure of the medical team towards an open, collaborative culture of healthcare

desensitisation to the human aspects of patient care, which occurs as part of burnout, is counter to the goal of humanising the ICU

professionals combining their skills and expertise. When faced with the shortage of ICU doctors and duration of specialist training, the creation of the critical care practitioner role (increasingly commonplace in USA) has not only provided a practicable solution to address the staffing shortfall, it has also broken down the traditional dichotomy of physician and nursing roles. This strategy produces results while challenging status quo and is an example of thinking-outside-the-box which, when appropriate, can be desirable and advantageous in various aspects of critical care practice.

Traditional forms of training mean that doctors, nurses and other allied health professionals undergo training in separate streams until qualification, beyond which they are abruptly expected to work together in a multidisciplinary ICU team. This collaboration can fail at several junctures - inefficiency, poor understanding

of colleagues' roles and responsibilities, ineffective communication etc. The logical approach to improving team performance should involve team-based training - this can take place in a realistic yet safe environment of a simulation (both high- and low-fidelity) setting. A variety of scenarios can be practised and assessed, ranging from single tasks e.g. patient intubation to complex situations e.g. managing a multi-trauma patient through the resuscitation phase into the operating room. Analogous to the seamless collaboration within the motorsport pit-team, the ICU team of the future should comprise individuals who recognise their unique roles, communicate clearly and work together confidently and synergistically.

The increasing availability and popularity of simulation workshops at international conferences and high-fidelity simulation training courses are strong indicators that the future of ICU training will be team-based. Further research into psychosocial phenomena influencing team effectiveness and a better understanding of performance indicators will give us a foundation for teamworking that is excellent not by chance, but by design (Ervin et al. 2018).

Future tools

The role of cognitive aids and tools should also be considered. Protocols, standard operating procedures (SOPs) and checklists reduce variability in practice and ensure that high-quality care and standards are consistently achieved. However, detractors argue that this approach favours data-generated guidelines over personalised care which is specifically tailored for the patient. The protocolised versus personalised approaches represent extreme ends of patient care and a happy medium is probably the best way forward. Our improved understanding of genomics and metabolomics will better equip us to personalise therapy e.g. select suitable patients for specific treatments, while

protocols and SOPs reduce cognitive demand, allowing us to focus on other important aspects of patient care (Patel and Buchman 2016).

The ICU is also becoming more reliant on computers to deliver and record care. A key issue is that the human-computer interface is rarely seamless and has lagged behind the experience in personal technology platforms such as smartphones and other consumer devices. Wasted working time due to poor user interface and/or clumsy processes is a recurring theme in healthcare. However, recent advances in digital healthcare innovation are placing more emphasis on streamlining work and increasing the efficiency of the ICU team.

Conclusion

With more patients surviving ICU admission, we have begun to appreciate the

psychological impact of critical illness and its burden on ICU survivors, their families and society. We recognise that humanised ICU care and a healing environment can improve functional outcomes. There will be emphasis on quality of life, not necessarily quantity, with more research focusing on holistic patient care.

The growing complexities of critical care, unrelenting pace and expectations will take a toll on all ICU health professionals – smarter ways to train and work can improve teamworking efficiency and job satisfaction. We are more accepting of the fact that healthcare professionals are not resistant to burnout and welcome measures that promote staff wellbeing and resilience. A happy well-functioning team is far more likely to deliver an excellent quality of care.

Focusing on the human aspects of

patients, family members and healthcare professionals is a significant cultural shift — this, we firmly believe, is the future of critical care. ■

Key Points

- Advances in medicine and increasingly complex procedures in frail patients are resulting in longer and more complicated ICU admissions.
- 'Humanising the ICU' reminds us to focus on the human being behind the machines, paraphernalia and clinical syndromes.
- As more patients survive ICU admission, the scale of Post-Intensive Care Syndrome (PICS) and its crucial role in functional outcomes are becoming a stark reality.
- Burnout is common in critical care, with a prevalence of 30-60% in ICU professionals.
- The growing complexities of critical care, unrelenting pace and expectations will take a toll on all ICU health professionals – smarter ways to train and work can improve teamworking efficiency and job satisfaction.

References

- Brindley PG (2017) Psychological burnout and the intensive care practitioner: A practical and can-did review for those who care. *JICS*. 18(4): 270-5.
- Cavallazzi R, Saad M and Marik P (2012) Delirium in the ICU: an overview. *Ann Intensive Care*. 2(49).
- Chuang C, Tseng P, Lin C et al. (2016) Burnout in the intensive care unit professionals: a systematic review. *Medicine*. 95(50): e5629.
- Ervin J, Kahn J, Cohen T et al. (2018) Teamwork in the intensive care unit. *Am Psychol*. 73(4): 468-77
- Garrouste-Orgeas M, Flahault C, Vinatier I et al. (2019) Effect of an ICU diary on post-traumatic stress disorder symptoms among patients receiving mechanical ventilation: A randomised clinical trial. *JAMA*. 322(3): 229-39.
- Gültekin Y, Özçelik Z, Akinci S et al. (2018) Evaluation of stressors in intensive care units. *Turk J Surg*. 34(1): 5-8.
- Jones C, Bäckman C, Capuzza M et al. (2010) Intensive care diaries reduce new onset post traumatic stress disorder following critical illness: a randomised, controlled trial. *Crit Care*. 14(5): R168.
- Lake C (2016) Resilience – and why it should not be essential. NHS Leadership Academy. Available from leadershipacademy.nhs.uk/blog/resilience-not-essential/
- Marra A, Ely E, Pandharipande E et al. (2017) The ABCDEF bundle in critical care. *Crit Care Clin*. 33(2): 225-43.
- Parker A, Sricharoenchai T and Needham D (2013) Early rehabilitation in the intensive care unit: Preventing physical and mental health impairments. *Curr Phys Med Rehabil Reports*. 1(4): 307-14.
- Patel V, Buchman T (2016) Cognitive overload in the ICU. Available from psnet.ahrq.gov/web-mm/cognitive-overload-icu
- Rawal G, Yadav S and Kumar R (2017) Post-intensive care syndrome: an overview. *J Transl Int Med*. 5(2): 90-2.
- Seppälä E and Cameron K (2015) Proof that positive work cultures are more productive. Harvard Business Review. Available from hbr.org/2015/12/proof-that-positive-work-cultures-are-more-productive
- Vincent J, Creteur J (2015) Paradigm shifts in critical care medicine: the progress we have made. *Crit Care*. 19: S10.
- Watson P, Ceriana P and Fanfulla F (2012) Delirium: Is sleep important? *Best Pract Res Clin Anesth*. 26(3): 355-66.
- Wilson M, Beesley S, Grow A et al. (2019) Humanising the intensive care unit. *Crit Care*. 23(32).