

WHY I HAVE LEFT THE “OPEN PLAN” ICU BEHIND AND CONVERTED TO A SSSS....SINGLE BED

Director's Blog

STGH 2014, 1 MAY



Over the last 25 years I have had the privilege of leading or been closely involved in the design of several new Intensive Care Units. All have been “open plan” units with the ratio of “isolation rooms” to shared bed area being less than 1:4. Plenty of space was allowed between beds in the open area with each bed area

being at least 20 metres’ squared as recommended by our College of Intensive Care Medicine. Visibility across all patients from the “nurses’ station” was fantastic. When occupancy was less than 70% the units all seemed spacious and orderly but once all beds were “opened” the problems of open design became apparent.

Now the time has come to plan a new critical care floor. This has caused me to reflect on the “open design” ICU. We know that patient experience is positively associated with better outcomes and improved patient safety¹ so **patient centred planning** is vital for an area that will need to last a quarter of a century.

- 1 Doyle C, Lennox L, Bell D. BMJ Open 2013;3:e001570. doi:10.1136/bmjopen-2012-
- 2 N Engl J Med 2014;370:444-454
- 3 Pandharipande et al N Engl J Med 2013;369:1306-16
- 4 Hopkins et al Am J Respir Crit Care 2012;186:1220-8
- 5 <https://www.youtube.com/watch?v=-lAxEA4zTdc>



In the planning phase, there is pressure to reduce or omit items and amenities to save money in the build phase. But such omissions become constant reminders of how short sighted economic decisions can impact on the daily working and patient care environment. As ICU's function 24 hours a day there is constant emptying and refilling of bed areas so overuse of utilities is quick to show up. Sinks at 1:3-5 beds or even shared between patients and staff soon become overused.

Unisex single staff toilets become impossible to keep clean.

(Imagine the flow of urine at change over when staff numbers are double!) High traffic areas with corridors narrowed to save money and space rapidly showed wear and tear. Service areas and circulation space become storage areas cluttered with the very large pieces of equipment. And noise levels in open areas, whether at the bed area or work station, reach disruptive levels for both staff and patients.

Delirium in ICU patients was recently reviewed by Reade and Finfer, in the Critical Care Medicine series in the New England Medical Journal.¹



Delirium is a common complication of an ICU stay. It involves a fluctuating disturbance of conscious state and cognition. It's cause is multifactorial but the fact remains patients with delirium do worse. There is both an increase risk of death and impaired long term cognitive function. The longer the delirium persists, the worse the long-term cognitive impairment.¹ It is worth trying to prevent delirium through noise reduction, interruption to sedation, early mobilization, time orientation, and mental

stimulation. Single rooms have a role to play in this. As a more peaceful environment, they help promote a good night's rest. Seeing a loved one in ICU, in an agitated delirium is very distressing. Family involvement in care can be enhanced by use of a single room. With space and privacy there is the ability to set the room out with time and place orienting objects such as a clock and personalized items. More liberal visiting time based on individual patient needs can be facilitated. Maybe a favourite pet can visit or personal

music or DVD's can be shared with visitors. Open units are much less suited to achieve this degree of individualized care.

Having a single room during those sad times at end of life allows patients and families greater privacy and dignity.

I have become a recent enthusiast for "Boot Camp" for Intensive Care, as evidence emerges that exercise during and after critical illness improves mental, emotional and physical wellbeing.¹ I am impressed how much our ICU staff manage to achieve in an open unit but their task is impeded by their cluttered and cramped working environment. Exercise and mobilization should be a part of care for all appropriate patients. Space and privacy of single rooms are important adjuncts to allow our physiotherapy colleagues to carry out early mobilization and exercise and families can be encouraged to participate. It is said single rooms increase

the floor size of an ICU with increased mileage staff have to cover in a shift. Rather than look upon this as a negative, it becomes an opportunity for staff to join the ICU boot camp programme with their patients!

Infection control in ICU requires many steps. We have been fortunate to have access to a clinical information system that readily displays infection alerts, microbial culture pattern and antibiotic use with the ability to time limit antibiotic use electronically. Only ICU medical staff can prescribe, a safety net when those pesky surgeons want to add antibiotics to antibiotics. But open plan units without a sink by every bed and only one bathroom for patient use, hand washing and patient amenity can be less than ideal for controlling MRO's. In addition seems there are never enough single rooms to isolate appropriate patients. Whether it be infection control, noise minimization or privacy, curtains as a barrier between patients do not compare with single rooms.



My vision for a new, fit for purpose Intensive Care Floor, purpose built and future proofed has single rooms for all patients, promoting privacy and normalcy, peace and quiet, amid the intense technological barrage of lights and alarms. I am mindful to keep our ICU patients at the centre of our care. Keeping them at the centre of the planning phase is part of this. And I have drawn the conclusion that the single room, single bed, ICU model is the way to go.¹

By

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