

# Poor planning: hospital design guidelines fundamentally flawed

Cindy Towns, Michelle Balm

Internationally, there has been a move to single occupancy hospital rooms. France adopted single rooms for new construction 20 years ago, while British, Dutch and Norwegian hospitals are moving towards single occupancy designs.<sup>1</sup> In the United States (US), single occupancy rooms have been a minimum standard for new builds since 2006, and in Canada, design initiatives have single rooms as a cornerstone feature.<sup>2,3</sup>

In contrast are Australia and New Zealand design guidelines. The Australasian Health Facility Guidelines (AusHFG) provide design guidance for hospitals in Australasia.<sup>4</sup> AusHFG reports that their work is informed by evidence, clinical experts and consumers and provides a best-practice approach. Despite these claims, the guidelines do not provide recommendations on the proportion of single rooms, leaving it to local jurisdictions to determine the optimal ratio of single to multi-bed rooms. To date, Health New Zealand – Te Whatu Ora have aligned with AusHFG and not made recommendations outside of what is included in the published guide. New Zealand public hospitals have only a small proportion of total beds as single rooms, with the majority provided in multi-bed rooms.

Shared rooms compromise clinical standards, breach patient rights and privacy law and undermine cultural safety.<sup>5</sup> Given the life span of hospitals, there is no sound financial argument in their favour. Effective infection prevention and control is significantly more challenging with multi-occupancy design. Potential infection sources in a shared environment include surfaces, equipment, air and water. Standard precautions mitigate these risks somewhat but cannot protect from exposure to contaminated air or water. Strong evidence demonstrates that single rooms decrease transmission of SARS-CoV-2 in hospitals and resistant bacteria in the intensive care unit (ICU) setting.<sup>5,6</sup> Meta-analysis confirms a reduction in hospital-acquired infections (HAI).<sup>7</sup> This evidence is reflected in guidelines for the control of respiratory and gastrointestinal viruses, *Clostridium difficile* and multi-drug resistant organisms, which advise admission to single rooms.<sup>8</sup> New Zealand

practitioners are frequently unable to meet these basic standards due to poor design. In addition, infection control competes with other patient needs for the limited number of single rooms, putting patients and whānau at risk and creating tension between clinical and operational teams.

Important considerations for our healthcare facilities are the clinical needs of an ageing population. By 2028, 1 million people will be over 65 and 200,000 will be over 85.<sup>9</sup> Delirium and dementia, already high prevalence conditions, will continue to rise, and pose sizeable challenges for our poorly designed public hospitals. Delirium, an acute confusional state, is associated with increased length of stay (LOS), infections, poor post-discharge function, higher need for residential care, cognitive decline and death.<sup>5</sup> A quarter of adult inpatients already struggle with delirium, and fundamental to its management are single rooms.<sup>10</sup> Local and international guidelines emphasise the need for control of light, noise and sleep—factors that are impossible to control in shared rooms with disruption from toileting, nursing care, patient deterioration and transfers.<sup>5</sup>

People with dementia currently number 70,000, but by 2050 this will increase to 170,000.<sup>11</sup> Over 80% of these patients will develop the behavioural and psychological features of dementia (BPSD), which include hallucinations, delusions, sleep disturbance, depression, inappropriate sexual behaviour and aggression.<sup>12</sup> Management guidelines again highlight the need for single rooms, but due to poor design, bed shortages and a lack of protective policies, these patients are frequently cohorted in shared spaces.<sup>13</sup> Hospitals continue to place men and women in the same room despite the threat this poses to women, a practice prohibited in the National Health Service (NHS) since 2010.<sup>14,15</sup>

Healthcare organisations have a duty of care to provide a safe environment for patients and staff.<sup>5,15</sup> No person should have to share a room with a patient who is agitated, aggressive or sexually inappropriate. Given the high rates of delirium and dementia, this is far from assured in our hospitals. Review of the many patient complaints and staff incident reports would attest

to the risks posed to patients in shared rooms.

Patient rights are not just about personal security. The Health and Disability Code of Rights (The Code) stipulates rights to privacy and dignity, while the Health Information Privacy Code (HIPC) provides the legal framework for keeping health information private. Hospital patients often have conditions that compromise these rights.<sup>5</sup> Incontinence, diarrhoea and vomiting are common. Sensory, cognitive or physical impairments also undermine patients' ability to manage their own privacy. Bodily exposure is common, and in shared rooms intimate bodily functions are performed next to strangers who can hear, smell and sometimes see what is occurring. Sensitive conversations disclosing private medical information can also be heard.

The Code not only outlines patient rights but also the duties of providers to uphold them. Health authorities admit that they cannot meet the privacy requirements of the Code or HIPC within shared rooms, so the question must be asked as to why Health New Zealand – Te Whatu Ora is allowed to continue to design and build hospitals that cannot uphold basic rights.<sup>5</sup>

Culturally safe care is a requirement for practice in New Zealand but cannot be provided in shared spaces. Research highlights the role inappropriate design has in poor healthcare experiences for Māori.<sup>16</sup> Participants highlighted rooms that could not accommodate whānau and the lack of dignity innate to having sensitive conversations in shared spaces. Having family present overnight is also desirable in many Pacific cultures and is an advantage for non-English speaking patients.<sup>17</sup> Limited space within shared rooms creates a source of tension and distress as visitors increase noise and disruption and further undermines the right to privacy for other patients.

Proponents of multi-occupancy rooms cite cost as a factor in their arguments; however, this is flawed. Single occupancy design may cost more initially, but this will be easily recouped over time. US research predicted only a 5.3% increase, with costs expected to be recouped within a year, while United Kingdom (UK) research predicted a similar small 5% increase.<sup>18,19</sup> Some research also demonstrated that 100% single occupancy can be achieved with the same space as a 50%

single room allocation when other space saving features are used.<sup>20</sup> Cost gains with single rooms will be accrued with better care of high prevalence conditions (e.g., infection, delirium and dementia) reducing LOS. Patient transfers (i.e., when a patient develops a presentation change not amenable to a shared space) and reduced drug errors will also reduce cost and improve patient flow.<sup>5</sup> Evidence shows that 85 single patient rooms can achieve the same capacity as 100 beds in a multi-bed environment.<sup>1</sup> A 2023 *BMJ* review concluded that there was no economic benefit to multi-occupancy rooms, a conclusion rendered without including gains in delirium and dementia management.<sup>21</sup>

Although some have raised concerns about falls and pressure injuries for patients in single rooms, research demonstrates no clear difference between single and multi-occupancy designs.<sup>5,21</sup> Similarly, arguments that state that some patients “prefer company” fail to accurately reflect research that overwhelmingly favours the privacy and dignity of single rooms.<sup>15,22</sup> Such arguments also fail to recognise the non-equivalence between preferences and rights.

Pleasingly, a recent meeting and correspondence with members of the National Health Facility Planning – Infrastructure and Investment Group for Health New Zealand – Te Whatu Ora indicates that design teams will now recommend some patient areas be designed with 100% single rooms (email Health New Zealand – Te Whatu Ora, December 2024). However, these are currently limited to paediatrics, obstetrics and gynaecology and mental health. It is not clear why adult medical wards housing infectious disease—and where delirium, dementia and disability are highly prevalent—are not currently included in these recommendations.

New Zealand hospitals must meet basic clinical, ethical and medico-legal standards of care. The life of a hospital building exceeds 40 years and, consequently, so will their design errors.<sup>23</sup> Health facilities guidelines and design briefs must consider infection control, the needs of an ageing population and the privacy and dignity of all patients. New Zealand hospitals need to follow international best practice and move to 100% single rooms for new builds and major renovations.

**COMPETING INTERESTS**

The authors declare no conflicts of interests or financial disclosures.

**AUTHOR INFORMATION**

Cindy Towns: General Physician, Department of General Medicine, Wellington Hospital; Geriatrician, Older Adult Service, Te Whatu Ora Capital, Coast and Hutt Valley; Clinical Ethics Advisor, Te Whatu Ora Capital, Coast and Hutt Valley; Senior Lecturer, Department of Medicine, University of Otago, Wellington.

Michelle Balm: Infectious Diseases Specialist, Infection Services, Te Whatu Ora Capital, Coast and Hutt Valley, Wellington, New Zealand; Clinical Microbiologist, Awanui Labs, Wellington Hospital.

**CORRESPONDING AUTHOR**

Dr Cindy Towns, PhD MBChB FRACP: Department of General Medicine, Wellington Hospital, Riddiford Street, Newtown, Wellington 6021, New Zealand.  
E: Cindy.Towns@ccdhb.org.nz

**URL**

<https://nzmj.org.nz/journal/vol-138-no-1612/poor-planning-hospital-design-guidelines-fundamentally-flawed>

**REFERENCES**

- Detsky ME, Etchells E. Single-patient rooms for safe patient-centered hospitals. *JAMA*. 2008;300(8):954-6. doi: 10.1001/jama.300.8.954.
- The Facility Guidelines Institute. 2006 Guidelines for Design and Construction of Health Care Facilities [Internet]. Washington, DC (US): The Facility Guidelines Institute, The American Institute of Architects Academy of Architecture for Health, US Department of Health and Human Services; 2006 [cited 2024 Feb 15]. Available from: <https://www.fgiguideines.org/wp-content/uploads/2016/07/2006guidelines.pdf>
- Ward of the 21st century [Internet]. CA: University of Calgary and Alberta Health; 2024 [cited 2024 Feb 24]. Available from: <https://www.w21c.org>
- Australasian Health Infrastructure Alliance. Australasian Health Facility Guidelines [Internet]. Sydney (AU): Australasian Health Infrastructure Alliance; 2015 [cited 2025 Mar 19]. Available from: [https://aushfg-prod-com-au.s3.amazonaws.com/Part%20A%20Whole\\_6\\_0.pdf](https://aushfg-prod-com-au.s3.amazonaws.com/Part%20A%20Whole_6_0.pdf)
- Towns C, Kelly M, Ballantyne A. Infection, ageing and patient rights: Time for single-occupancy hospital rooms. *Aust N Z J Public Health*. 2024;48(6):100198. doi: 10.1016/j.anzjph.2024.100198.
- Cooper BS, Evans S, Jafari Y, et al. The burden and dynamics of hospital-acquired SARS-CoV-2 in England. *Nature*. 2023;623(7985):132-8. doi: 10.1038/s41586-023-06634-z.
- Halaby T, Al Naiemi N, Beishuizen B, et al. Impact of single room design on the spread of multi-drug resistant bacteria in an intensive care unit. *Antimicrob Resist Infect Control*. 2017;6:117. doi: 10.1186/s13756-017-0275-z.
- US Centers for Disease Control and Prevention. 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings [Internet]. US: Centers for Disease Control and Prevention; 2024 [cited 2024 Feb 22]. Available from: <https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html>
- Stats NZ. One million people aged 65+ by 2028 [Internet]. Wellington (NZ): Stats NZ; 2022 [cited 2024 Feb 16]. Available from: <https://www.stats.govt.nz/news/one-million-people-aged-65-by-2028/>
- Gibb K, Seeley A, Quinn T, et al. The consistent burden in published estimates of delirium occurrence in medical inpatients over four decades: a systematic review and meta-analysis study. *Age Ageing*. 2020;49(3):352-60. doi: 10.1093/ageing/afaa040.
- Alzheimers New Zealand. Facts and figures [Internet]. NZ: Alzheimers New Zealand; 2024 [cited 2024 Feb 16]. Available from: <https://alzheimers.org.nz/explore/facts-and-figures/>
- Abraha I, Rimland JM, Trotta FM, et al. Systematic review of systematic reviews of non-pharmacological interventions to treat behavioural disturbances in older patients with dementia. The SENATOR-OnTop series. *BMJ Open*. 2017;7(3):e012759. Erratum in: *BMJ Open*. 2017;7(7):e012759corr1. doi: 10.1136/bmjopen-2016-012759corr1.
- Towns C, Hodgetts K, Shirtcliffe P, et al. General Medicine wards and the mental health crisis: invisible and unsafe. Under Review. *Intern Med J*. 2024.
- Towns CR, Rowley N, Woods L. Mixed gender accommodation: prevalence, trend over time and vulnerability of older adults. *Intern Med J*. 2022;52(3):474-8. doi: 10.1111/imj.15712.
- Towns C, Ballantyne A. Blowing the whistle on mixed gender hospital rooms in Australia and New Zealand: a human rights issue. *J Med Ethics*. 2024;50(8):513-6. doi: 10.1136/jme-2023-109080.
- Edmonds M, Shankar S, Elia TI, et al. Māori experiences and perspectives of hospital treatment in the context of acute care. *N Z Med J*. 2024;137(1601):63-73. doi: 10.26635/6965.6397.

17. Wylie E, Duthie V, Tautai Fakataha Team. Adult Medical Services, Cultural Experience Project [Internet]. Auckland (NZ): Auckland District Health Board; 2021 [cited 2025 Mar 19]. Available from: <https://static1.squarespace.com/static/5c18088d372b967f56ac2bc2/t/617b666beabcf12c272faf0a/1635477109790/AMS+Pacific+Report.pdf>
18. Maben J, Griffiths P, Penfold C, et al. One size fits all? Mixed methods evaluation of the impact of 100% single-room accommodation on staff and patient experience, safety and costs. *BMJ Qual Saf*. 2016;25(4):241-56. doi: 10.1136/bmjqs-2015-004265.
19. Ulrich RS. Essay: evidence-based health-care architecture. *Lancet*. 2006;368:S38-9. doi: 10.1016/S0140-6736(06)69921-2.
20. NHS Estates. Ward layouts with Single Rooms and Space for Flexibility. London (UK): The Stationary Office; 2005. (amended 2013).
21. Bertuzzi A, Martin A, Clarke N, et al. Clinical, humanistic and economic outcomes, including experiencing of patient safety events, associated with admitting patients to single rooms compared with shared accommodation for acute hospital admissions: a systematic review and narrative synthesis. *BMJ Open*. 2023;13(5):e068932. doi: 10.1136/bmjopen-2022-068932.
22. Walker D. Challenging the culture of caring of 100 years: the evidence behind single-room provision in hospitals. *Future Hosp J*. 2016;3(1):30-32. doi: 10.7861/futurehosp.3-1-30.
23. Hill R. \$47b bill for new hospitals and repairs over next decade - Health NZ. Radio New Zealand [Internet]. 2024 Aug 14 [cited 2024 Jan 24]. Available from: <https://www.rnz.co.nz/news/national/525079/47b-bill-for-new-hospitals-and-repairs-over-next-decade-health-nz>