



Australasian College
for Emergency Medicine

Emergency Department Design Principles:

Developing Functional, Safe and Therapeutic EDs

P963 (V1)

Aug 2025

acem.org.au

Document Review

Timeframe for review:

Every five years, or earlier if required

Next major review to be completed by:

August 2030

Content owner:

Emergency Medicine Standards Advisory Committee

Approval authority:

Council of Advocacy, Practice and Partnerships

Accessibility:

Public [website]

Revision History

Version	Date	Pages revised / Brief Explanation of Revision
V1	Aug-2025	Approved by the Council of Advocacy, Practice and Partnerships. Replaces G15 Guidelines on ED Design which is discontinued

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1. Purpose and Scope

This principles-based document has three primary aims:

1. To support and inform emergency department (ED) clinicians who are participating in building or modifying EDs in Australia and Aotearoa New Zealand, at the same time signposting other definitive sources where appropriate.
2. To emphasise that early and ongoing engagement with clinical and non-clinical staff groups working in the ED will provide planners with an expert and pragmatic understanding of workflow and the functional use of EDs, resulting in better design outcomes.
3. To highlight the important contribution of physical working environments to day-to-day staff work satisfaction, wellbeing and career sustainability, as well as patient wellbeing.

2. Related Resources

2.1 ED Design Guidelines

This ACEM document is a non-technical companion to Australasian Health Facility Guidelines (AusHFG) HPU 300 Emergency Unit.¹ HPU 300 provides detailed standard specifications for operational, functional, spatial and design components of EDs in Australia and Aotearoa New Zealand; it also outlines different models of care and advice on design-related needs of particular patient groups. The specifications detailed in HPU 300 are negotiable and form a baseline for local discussion.

ACEM also recommends the Facility Design Guidance Note² developed by Te Whatu Ora (Health New Zealand), which is dedicated to Kaupapa Māori design considerations.

2.2 Regulation, Quality Assurance and Sustainability

Organisations engaged in the building or updating of an ED are required to comply with a range of health and safety requirements, building regulations and quality assurance standards as directed by local provisions. These are too numerous to list here, but the Australian National Construction Code³ and the Aotearoa New Zealand Building Code⁴ are good starting points.

In terms of environmental concerns, ACEM recommends Green Star as an internationally recognised sustainability rating and certification system operating in Australia⁵ and Aotearoa New Zealand.⁶

2.3 ED Capability and Workforce

Clinical service planning should, at a minimum, align with ACEM recommendations on the role delineation of EDs in Australia and Aotearoa New Zealand (S12).⁷ A facility must meet those minimum standards to be designated and signposted as an 'Emergency Department.' S12 defines the minimum service requirements for four levels of EDs and two levels of smaller hospital-based emergency care centres.

Clinical service planning should, at a minimum, accommodate the staffing recommended by ACEM workforce guidelines (G23).⁸ G23 provides a framework for establishing and maintaining a sustainable emergency medicine (EM) workforce. It outlines the considerations health services must make when planning for appropriate, effective, sustainable and comprehensive ED medical staffing.

3. General Principles

Good design should be fundamental to all new and redeveloped EDs in Australia and Aotearoa New Zealand, regardless of location or size. ACEM supports the following statements:

- Investment in the built environment can contribute to quality of life, community vitality and personal well-being.
- Organisations should promote engagement between ED staff and architects, designers, engineers and health planners, so that staff knowledge, experience and expertise is sought at appropriate stages of the building project.
- Impactful involvement in refurbishment/builds requires responsible senior clinicians (as asset managers) to understand the realities of capital expenditure funding and seek advice in presenting

an extended (sometimes up to 30-year) ED lifecycle plan.

- Designing appropriate services for those who face the greatest barriers to care will ensure a better experience for all. Consumer engagement is vital and should capture a broad, intersectional patient perspective. The design process should encourage a sense of individual and community ownership of the space. Planners should involve consumer organisations as early as possible and agree how and when such community input would be most beneficial.
- Each build or modification should aspire to both reflect upon and contribute to the evidence base for hospital design, within a cycle of continual learning.*
- Functional, spatial and salutogenic (health promoting) design considerations should be integrated in EDs, informed by the physical, mental, social and cultural experience of patients, *Whānau*/family, other carers and ED staff.
- Hospital design should be predicated upon a holistic view of patient flow, both within the hospital and between the hospital and the community, purposefully challenging the perception of the physical ED as an entranceway, foyer or reception area.
- Design should accommodate the needs of both biomedical and relational care† and provide opportunities to practice social emergency care.‡

4. Understanding the Design and Build Process

4.1 Planning Phase

Major decisions on the function and size of the ED should be made in the early planning stages. Changing these decisions later in the design process is difficult and expensive. Current practices for planning ED facilities are based on benchmarking and spatial blueprinting. Benchmarking includes using published data on attendances per annum, reviewing current operations and visiting other recently built or redeveloped EDs. Space planning is undertaken by the architect in consultation with user groups including clinicians and hospital administrators. The patient journey through the facility, and the spaces and equipment required, will provide a key narrative for the consultation.

Clinical Services Planning. It is vital that clinical input is sought early in this phase, and that it is not an exercise conducted in isolation by statisticians and non-clinical health planners. There is a high potential to misinterpret data relating to the projected health needs of populations without the contextual input of clinicians.’

This phase considers the current and, more importantly, future health service needs of catchment communities, accounting for existing clinical networks and the local healthcare infrastructure. Assessments are made on how healthcare needs can be met over the planned life of the building. This includes the forecasting of expected attendances, factoring in changing health needs and population demographics. Estimating the space required is based on these projections, with size determination often undertaken far in advance of the capital works being completed and made operational. Services will be planned to support preferred models of care.

Master Planning. The next stage of planning is to evaluate how the required clinical services are best supported by different types of physical structure within the designated site boundaries. Master plans consider the integration of various elements, such as buildings, landscapes, public spaces, infrastructure, and utilities. The input of clinicians is vital in campus planning, as they are best placed to identify how the layout supports interconnected clinical services and sustains the therapeutic and wellbeing needs of patients, *Whānau*/family, other carers and staff.

Functional Brief. The functional brief uses the clinical services plan to provide scope and scale. It applies the next level of detail to the project. For the first time new buildings will be specified, the full range of services articulated, and operational, functional and design requirements described.

Business Case Development: Business cases are a government requirement for most large-scale capital projects, to ensure value for money community outcomes. Senior clinician sign-off is recommended.

* The Centre for Health Design [Knowledge Repository](#) is a comprehensive free database of healthcare design research references and sub-collections.

† Relational care focuses on building positive, trusting relationships between caregivers and patients, underpinned by trauma-informed, and culturally responsive practices.

‡ Social emergency care, also known as social emergency medicine, is an emerging field within emergency medicine that recognizes the impact of social factors on health and the role of the emergency department (ED) as a social safety net.

4.2 Design Phase

Reviewing and approving the design proposal is a collaborative exercise involving clinical user groups, project managers, architects and engineers.

Concept Design: This is a high-level design which shows the relationships among clinical functions, services and other facilities both horizontally and vertically. It involves visualising the proposed build and illustrating its application, form, function and usability.

Schematic Design: These are department-focused plans that map the interrelationships between rooms and services within a defined unit (such as the ED). The flow of patients and staff is an important consideration. The next level of logistical detail is introduced at this point, in terms of consumables, waste, and interconnectivities with amenities such as electricity, water and telecommunications.

Detailed Design: After the schematics are signed off by senior clinicians, the detailed design phase involves the development of data sheets for each room in the hospital, with layouts agreed for furniture, fittings and equipment.

4.3 Delivery Phase

Procurement: This stage involves sending out requests for proposals (RFPs) or 'tenders' to potential contractors. Proposals are evaluated by factors including cost, quality, experience and delivery timelines. Procurement also includes contract negotiation, award and management.

Construction: This usually involves three phases: enabling works (upgrading utility networks to support increased scale), early works (clearing, demolition and site preparation) and main building works.

Completion and Commissioning: Before patients are allowed to enter the facility there is a commissioning and testing period, which assures that all components and systems are installed, tested, operated and maintained to requirements.

Post Occupancy Evaluation: This is the formal assessment of the functionality of the facility and how this compares with the documented design requirements. These user evaluations provide critical information on outcomes that can be fed back into future projects. Evaluations should avoid expediency and seek to elicit the authentic opinion of those working or being cared for in the new/refurbished space.

Defect Liability Period: A fixed period (generally 12 months) during which the contractor is responsible (within the limits set out by the building contract) for rectifying any issues that arise after practical completion. Once commissioned for use, issues previously unrecognised but uncovered by initial clinical work require rectification. This can be an intensive exercise for clinical staff over the first few months of new building use.

Note on Clinician Friendly Planning and Design

Scenario planning and testing is a key element of successful ED design. Physical life-size modelling of rooms can be highly instructive, as clinician walk-throughs can identify practical problems that cannot be envisaged by examining blueprints. For example, how to transport human waste from resuscitation to the disposal room, how to move a syncopal patient from the waiting room into resuscitation or transfer a patient with an infectious disease from ED Short Stay to the ICU.

Table-top simulation of critical patient flows within different design options and scenarios can be used to co-test functional planning with clinicians. New technologies in health planning and architecture enable virtual/augmented reality, high quality, digital models and renders. This can provide flexible access to models in the planning stages (a clinician will not have to be on a physical site to participate), can reduce costs and is agile with respect to iterative development.

5. Role of the Clinician

5.1 Engaging Clinicians Early

Computer Assisted Design (CAD) is often used to visualise discrete areas within a building, with emphasis on fitting specific equipment and features within each contained physical unit (such as a resuscitation bay) while employing optimal space efficiency. In isolation, this can lead to a 'reductionist' interpretation of a complex system/environment. A universal approach is needed to understand whole of system functional relationships, associated spatial adjacencies/zoning considerations and the professional and social

requirements of staff within this environment.

Emergency physicians are therefore key stakeholders in all phases of design and construction and must be consulted from project inception. The input of other ED staff, including nurses and clerical and support staff, cleaners and security officers is also vital in reducing ad hoc change due to unanticipated spatial and functional considerations. Without proper consultation, seemingly minor adjustments to plans can make the function of an area impractical or dysfunctional.

Note on Refurbishments

Refurbishments constitute a large proportion of ED building projects. These require early collaboration with clinical user groups, not least in anticipating site disruption and working through required operational adjustments, such as any need to 'decant' patients (relocate from one location to another). Advice from clinicians who have worked through the significant disruption caused by a major redevelopment is essential. Clinical functionality must be preserved during refurbishment projects.

Clinicians involved in new builds and refurbishments will:

- Appreciate clinical workflows and the functional use of EDs, especially where staffing/resources are tight and shared across a large 'footprint.' Standard ED components should not be based on inpatient ward-based considerations. The ED is an environment where most patients are ambulatory, some displaying behaviours of concern, and with lean staffing models deployed over large areas.
- Prioritise function over form, which is important when money inevitably gets tight during planning/delivery. Designing and building a new ED inevitably involves compromise between various needs, a negotiating position that senior ED clinicians face routinely.
- Uniquely understand the relationship between the ED and the rest of the hospital and have pragmatic insight into how 'traffic' will actually (rather than theoretically) flow. This has the potential to improve inter-departmental staff interactions, relationships and patient oversight.
- Predict how patients will react when they are confused/delirious/thought-disordered, with an ability to foresee how people will fall, hurt others, abscond, cause damage or deteriorate outside of clinician view.
- Be mindful of how information travels through the ED. Open plan models appear ideal for oversight and access purposes but can be problematic when patients are ambulant and can interrupt or overhear private clinical conversations.
- Know the difference between 'work as imagined and work as done.' Planners may suggest multiple data dashboards in the staffing area, but clinicians know which ones actually get used and how they should be placed/prioritised.
- Will think about staff needs in terms of physical spaces. Recreational areas, staff facilities and office space are often under-allocated in plans. Shift workers need privacy for sensitive work, as well as 'sanctuaries' to escape and recover from the sensory overload of the ED.

Clinicians participating in building projects must be provided with:

- Suitable briefing on the parameters of the project from the outset.
- Agreed arrangements governing the collaborative relationship between clinical users and the project management team. The nature of staff representation, the extent/timing of staff project involvement and expectations around project meeting participation should be understood from the outset.
- Sufficient protected and dedicated time to enable key decisions to be considered appropriately by responsible clinical users within normal work hours.
- Support from designers to enable service providers to identify 'lived experience' solutions through immersive approaches and techniques.
- Opportunities to visit other recently constructed or redesigned EDs and engage with clinical staff with previous experience in ED design projects.
- Professional development opportunities that enable clinicians to gain an understanding of evidence-based design principles as they apply to clinical environments.

6. Spatial and Functional Principles

6.1 General Considerations

Flexibility Through Standardisation

The development of multi-purpose spaces that can be adapted to prevailing presentation patterns and emerging models-of-care (flex-agility) is fundamental. Designing triage or fast track zones with small cubicles will not enable repurposing of that space during, for instance, pandemic conditions. All spaces must be designed for functional adaptation, accommodating portable specialist features/equipment in anticipation of sudden or incremental changes in case mix. Future proofing predicates the 'standardisation through flexibility' approach.

Entry and Egress

Location of hospital entry and egress points is a key consideration. The ED should not be the general entry point for non-ED functions of the hospital. Particularly after hours, the ED can (wrongly) act as an all-purpose transit area, for example as a 'concierge service' for short-stay inpatients or a general enquiries desk for the hospital, disrupting ED services and draining ED staff capacity. Hospitals require a main after-hours entrance, an ED entrance and a clear access point for birthing services.

It should not be possible for members of the public to access areas clearly designated for critical patient flow unless directed to do so. The designated flow of non-ED hospital staff into the ED also needs to be planned carefully.

Functional Relationships

ED design can be a contributory factor in adverse incidents. These can be mitigated or exacerbated by functional relationships built into the hospital design. The enhancement of staff situational awareness across high-risk zones is a feature of good design. Functional relationship failures may include, for example, placing resuscitation bays away from ambulance bays, having unobserved sub-waiting rooms or operating single patient rooms where there is limited nursing/medical capacity to observe patients.

Spatial planning, in terms of public/private flows, is an element of what is known in Aotearoa New Zealand as *tikanga* based health planning. For example, when a hot/*tapu* (emotionally charged) function is necessary for a task, a successful outcome often requires transitioning to a cold/*noa* (purely cognitive) function for logical analysis and decision-making.

6.2 ACEM Recommendations

ACEM recommends consideration of the following spatial and functional principles in all new builds and redevelopments:

- The planning of service and infrastructural redesign and redevelopment must extend beyond the ED to incorporate the entire hospital, recognising the need to prevent unnecessary steps in the patient journey.
- Universal design⁵ principles should underpin all ED builds and refurbishments, with appropriate and specific expertise sought at the earliest stage of planning.
- In terms of whole-of-system care networks, the interface with pre-hospital transit lounges, hospital in the home programs and virtual care services need to be built into human and technological infrastructures.
- Flexibility should be provided through a standardised approach that enables modular and mobile solutions to configure treatment spaces according to need.
- Appropriate hospital capacity, streaming and expediency planning must ensure that patients are not placed in inappropriate areas such as corridors and hallways.
- Clinicians need to be consulted on the pros and cons of open plan design versus pods or lines, and the trade-off in risk-benefit. An 'open plan' ED is optimal for staff line of sight and access but has implications for sound attenuation, patient navigation and infection control. Lessons should be

⁵ Universal Design (UD) is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent by people of all ages, abilities, sizes, neuroprocessing systems, sexes, genders, sexualities and both social and cultural backgrounds.

sought from hospitals that have achieved a good compromise on visibility versus patient separation.

- The technological and communications infrastructure should aspire to enabling rapid access to all data for any patient at any point in their journey through the hospital.

7. Salutogenic (Health-Promoting) Components

Salutogenic (health-promoting) considerations should be integral to the design of EDs. Environmental stressors, and associated behavioural manifestations (such as aggression), are often the product of an individual's inability to exercise control over their immediate environment. These stressors involve noise, lighting, wayfinding and movement, including proximity to other people. A calm and welcoming environment has been demonstrated to have a positive influence on patients' health and wellbeing and the reduction of anti-social behaviours.

7.1 Low Stimulus Areas

Access to low stimulus rooms for neurodivergent patients should be designed into the ED wherever possible.^{9,10} Sensory Modulation Interventions (SMI) assist people with the regulation of emotional and physiological arousal caused by the immediate environment. The need for specific safe spaces for patients requiring sensory modulation can be, paradoxically, a consequence of designing EDs which are visually welcoming only to those without sensory processing issues.

7.2 Light

- Ambient lighting in an ED should, as much as possible, mimic diurnal and circadian rhythm, with the appropriate dimming of lights protective of sleep-pattern hygiene. Dimmable lighting in all patient treatment spaces is ideal.
- Lighting should not shine directly into patients' eyes at any point on their journey, including along corridors through which supine patients are transported.
- Daylight ingress should be standardised within the ED design, with electric lighting used only to supplement and balance incoming daylight.
- Solar glazing, calming colours and artificial lighting must not mask the clinical perception of patient skin tones.
- ED staff are shift-workers and the preservation of their diurnal rhythms, including maximal access to natural light, is essential for mental and physical health and wellbeing.

7.3 Sound

The recommended maximum noise level in EDs is frequently exceeded. Noise pollution is linked to poorer patient outcomes and increased levels of stress in both staff and patients. Some patient groups are more vulnerable to the adverse impact of noise, including older persons, people with mental health issues, neurodivergent people, migraine sufferers and those with sensory impairment. Noise may also make communication between staff and patients unintelligible, leading to misunderstandings and frustration. Conversely, poor acoustic insulation may infringe upon patient privacy.

- Sound levels should conform with, or be lower than, those recommended in Australian and New Zealand Standards and World Health Organization (WHO) guidelines (<35dBA during the day).
- EDs should be designed to minimise the transmission of overall sound and that between adjacent treatment areas.
- Strategies for combatting problematic noise levels include acoustic design features (absorption, reflection and diffusion), such as:
 - Sound-absorbing ceiling tiles
 - Ceiling battens
 - Soft floor coverings
 - Situating clinical areas away from unavoidable sources of noise
 - Using solid or glass doors and walls rather than curtains
- Communication between staff should be supported by digital solutions. Hands-free communication devices, like smart badges designed for healthcare settings, enable voice communication between staff, which reduces noise and mitigates risk associated with enclosed stream areas. Such solutions

can also act as notification systems enabling the removal of PA systems in the department.

74 Odour

Use of calming odours should be considered, with unpleasant smells eliminated through good functional design. For example, unpleasant odours may be associated with the location of the dirty utility and the route required to take waste to the disposal room.

75 Interior Design

The design of EDs should recognise that ED patients (and their relatives, *Whānau*/family, friends or other carers) are often frightened, anxious or in pain. A comfortable environment can have a vital mitigating effect.

Patient distress can be minimised by providing, for example, appropriately sized and comfortable seating (including bariatric seating, recliners for older persons and consideration for those using mobility aids). Seats should be arranged in clusters or groups but respecting personal space and the need to circulate. Oppositional seating should be avoided, as should seating that may stigmatise through separation.

Furthermore:

- Interior design that is responsive to cultural and linguistic diversity is a powerful tool for representation and for creating a sense of belonging. This should extend to wayfinding and signage.
- Bespoke interior design is also an enabler of appropriate clinical care in paediatric, low-stimulus, end-of-life care and mental health areas.
- Biophilic design can enable connection to outside spaces or can be expressed through interior design that alludes to nature, and the use of natural materials and colours.
- For LGBTQIA+ITSB (lesbian, gay, bisexual, transgender, queer, intersex, asexual, Irawhiti, Takatapuhi, Sistergirl, or Brotherboy) patients, relatives, *Whānau*/family, friends or other carers services should visibly display that members of this community will be safe, welcomed and believed. This can be achieved by improving community visibility with the latest Pride flags, posters, lanyards and name badges. Aboriginal and/or Torres Strait Islander and Māori art should also be incorporated as part of business-as-usual design.

Artwork

Art and images can help to reduce stress and anxiety in patients as well as shortening perceived waiting times. The embedding of culturally appropriate and diverse public art and creative place-making strategies can also generate a sense of civic pride. In some jurisdictions the allocation of an art budget is mandated for new health buildings. Artwork chosen for display should be tailored to the local population and their various cultures.¹¹

7.6 External Areas

Biophilic Design

ACEM believes that biophilic design of EDs is beneficial to staff, patients and organisations.

Biophilic design is an architectural approach to the built environment that enhances human functioning by fulfilling our innate instinct to connect with nature. The implementation of biophilic design is important to counter the negative impacts of urbanisation (including as an enabler of climate adaptation and emission mitigation) and the rising incidence of stress-related conditions.

From an Indigenous health perspective, a connection to land is an intrinsic element of wellbeing. In the Māori belief system, nature is an enabler of *whakanoa* ('cleansing'), aiding the transition from *tapu* (restricted, sacred) to *noa* (wellness, unrestricted state). Access to green space or even natural finishes can replenish *mauri* (life force / spirit).

For Australian Aboriginal and/or Torres Strait Islander patients, a stay in hospital can mean separation from country, supportive family networks and place-based spiritual, cultural and healing practices. Many Indigenous patients prefer to be outside where they can feel connected with land and unconstrained by walls and the built environment, as well as being able to yarn and smoke. The biophilic potential of these areas needs to be optimised.**

** Read [here](#) about the collaboration between Royal Darwin Hospital, Larrakia traditional healers and ethnobotanists to develop the hospital campus grounds, which feature plant species of cultural significance and reference homelands.

Disaster Scenarios

Built-in flexibility may enable outdoor spaces to be used as community hubs within some disaster scenarios. Thought should be given to how these spaces may be covered to enable people to gather and shelter. Other outdoor areas, such as ambulance spaces, can be transformed into decontamination areas with appropriate forward thinking in design.

8. Patient, Family/*Whānau* and Other Carer Requirements

A positive experience for patients, and their *Whānau*/family or other carers, from their arrival in the ED through to departure can reduce perceived waiting times and mitigate stress and agitation.

8.1 Cultural Safety

Cultural safety is determined by First Nations individuals, *Whānau*/family and communities. Culturally safe practice is the ongoing critical reflection of health practitioner knowledge, skills, attitudes, practicing behaviour and power differentials in delivering safe, accessible, and responsive healthcare free of racism. In terms of design cultural safety should be embedded across all ED spaces, from triage to discharge and staff areas, preferably through co-design with Aboriginal and Torres Strait Islander and Māori communities in all capital redevelopment and ED infrastructure projects.

EDs are often designed around biomedical models without spaces designed to social and cultural determinants of health. Dedicated work areas are required for members of 'social emergency care' teams, such as cultural navigators, Aboriginal Health liaison offices, interpreters, and peer support workers, and should be co-located, visible and integrated within flexible ED zones.

8.1.1 Aboriginal and Torres Strait Islander Peoples

ACEM promotes cultural safety in ED settings and encourages strategies to enhance rights-based and Aboriginal and Torres Strait Islander-led initiatives, particularly in planning the built environment and introducing innovative programs.¹² Relational care, cultural safety, recognition of sovereignty, and the fostering of trust should be paramount in design decisions. The intergenerational trauma of First Nations peoples mandates the need for healing-centred spaces.

Design-based enhancements to cultural safety, should include displaying local Aboriginal and Torres Strait Islander artwork, symbols and flags^{††}, increasing private areas for patients and their families to gather and providing designated outdoor areas where people can wait and be called inside for treatment. Separate, gendered places for men and women in the ED should be considered, to allow for culturally appropriate emergency care.

8.1.2 Māori

Tikanga-based health planning incorporates Māori cultural values, practices and knowledge to ensure culturally appropriate and equitable health outcomes. This approach recognises the importance of *whānau* (family), community and spiritual well-being in shaping health and well-being.

ED builds and redesigns should include consultation with *mana whenua* via the Māori health team and reflect Te Ao Māori concepts. Fundamental to this is the provision of safe spaces for *whānau* to be together for healing or solace in times of distress. Access to *te taiao* (the natural environment) is recommended if possible.

Please refer to the Te Whatu Ora Facility Design Guidance Note² for Kaupapa Māori design considerations. ACEM's He Ara Tiatia ki te Taumata o Pae Ora Manaaki Mana¹³ (Pathways to Achieving Excellence in Emergency Care for Māori) also provides guidance on culturally safe ED design.

8.2 Triage

A triage area is a single point of entry for acute patients and provides controlled access to treatment areas and to the wider hospital. The following principles apply:

- The design of the triage area should be compatible with the requirements of the Emergency Triage Education Kit (ETEK).¹⁴

^{††} Read [here](#) about how the National Aboriginal Design Agency was engaged to work with the Gumbaynggirr community in the design of the Macksville Hospital.

- The size of a triage area should be determined by the number of triage staff present at any given time.
- Additional spatial requirements for triage areas are guided by local needs, for example dedicated triaging areas for paediatric patients.
- Alternative triage models may have design implications, for example Triage and Treat, Team Triage approaches and ensuring rapid assessment and early engagement with Aboriginal and/or Torres Strait Islander and Māori patients.

8.3 Waiting Areas

Waiting rooms accommodate patients, *Whānau*/family and other carers pre- and post-triage, as well as those awaiting entry to treatment areas or expecting transportation post-discharge. The size of a waiting room is dictated by the annual census, models of care (including local cultural factors) and the role of the ED within the whole hospital.

In addition, some people go to the ED simply for warmth, rest and sanctuary and/or access to amenities such as phone charging points or needle/syringe exchanges. These ‘drop-in’ style functions are not accounted for in most designs, despite being an inevitable phenomenon in a free 24/7 public service. Designs need to embrace the reality of both social and clinical needs, as encapsulated by ‘social emergency medicine’ model.

Considerations to optimise the waiting experience for patients and *Whānau*/family and other carers include the following:

- Disorientation is a common side-effect of physical and mental unwellness. A patient entering the ED should immediately feel ‘in safe hands.’ Wayfinding (right information, right time, right place) that is intuitive, both contextually and culturally, is an important human need in terms of dignity, autonomy and choice. Signage should be expressed in a positive way, using plain English, avoiding prohibitive messaging, and employing picture boards as appropriate.
- Providing regular information about the ED process and indication of wait times reduces patient stress. Such information must emphasise the importance of triage and initial evaluation, and support escalation of care.
- Dedicated waiting areas that enable the separation of particular patient cohorts (for example children, older persons and/or patients experiencing psychological distress) from the main ED waiting areas should be considered. The benefits of creating bespoke waiting environments for these cohorts needs to be balanced with staff capacity to maintain line of sight on ‘sub waiting rooms.’
- Opportunistic health promotion in waiting areas, i.e. providing health information or advice auxiliary to the purpose of the patient’s visit to the ED, through posters, pamphlets, video and/or other media, can mitigate frustration and stress and increase connection with services to enhance health outcomes.
- Lounge areas separate from initial waiting areas within the ED for patients awaiting simple test results or paperwork prior to discharge can provide patients with a sense of progression in their journey.
- The design should ensure there is adequate space to accommodate patients, *Whānau*/family, or other carers during peak times.
- Patients and *Whānau*/family and other carers should have access to private prayer space that is protected from hospital noise and has both seating and floor space available for multiple people. Ideally, *qibla*, the direction towards which Muslims pray, will be marked so people know where to face.
- Some recent builds have not included waiting areas, on the assumption that systems will naturally recalibrate towards ‘no wait’ throughput in these circumstances. ACEM does not consider this an appropriate or viable approach.

8.4 Psychological Safety and Privacy

While all patients require a psychologically safe environment, people presenting under certain circumstances (for example, having experienced family or gendered violence or sexual assault or requiring other forensic examinations) will immediately require a private space to talk to ED staff and to be assessed

and treated with due sensitivity.¹⁵ ACEM believes that all EDs require specific and designated private interview areas as a feature of trauma-informed care. Healing environments should be purposefully designed to avoid practices that could retraumatise, including having to re-enter the waiting area on multiple occasions prior to accessing other diagnostic or treatment areas. The design of consultation rooms should consider social care needs such as housing, addiction, family violence, and mental health support.

While there are specific privacy issues for people presenting under the circumstances identified above, the need for patient privacy and confidentiality should be accommodated for all patients, as appropriate or upon request. Cubicles separated by curtains should not be considered private areas.

85 Considerations for ED Patient Case-mix

8.5.1 Short Stay Patients

ED short stay units (ED SSUs) are designed for the short-term treatment, observation, assessment and reassessment of patients following triage and assessment in the ED. ED SSUs are designated inpatient care areas and should have facilities and amenities similar to inpatient wards.¹⁶

8.5.2 Children and Adolescents

The medical and psychosocial needs of children and young people must be considered as distinct from those of adults and reflected in the designated environment.^{17,18} The following considerations apply:

- Children and young people should be kept separate (physically, acoustically and visually) from other patients in the department, ideally by the creation of a dedicated paediatric waiting and treatment areas. Pragmatically, the principle of separation must always be balanced with safety according to available resourcing.
- Areas dedicated for use by children and young people should be clearly designated, furnished and decorated in a manner that is colourful, comfortable and reassuring for patients and their *Whānau*/family or other carers. EDs should also provide suitable play areas and facilities for children in waiting areas. Adolescent areas should be purposefully designed to be welcoming to that age group.
- Paediatric areas must be easily observed at all times by clinical staff while also providing privacy and confidentiality for patients.
- The design of consultation and treatment areas should allow and encourage *Whānau*/family or other carers to remain with the child or young person. The option of having *Whānau*/family or other carers in attendance must be encouraged for all aspects of ED care.
- Treatment rooms should be easily accessible from the paediatric waiting area and should protect children and young people from disturbing sounds or sights in the ED.
- The resuscitation room must be fully equipped to manage all types of paediatric emergencies. Mobile paediatric resuscitation trolleys should be easily accessible.
- Adequate space should be available for children/families in crisis, including a private room with suitable supervision by emergency staff.
- Dedicated or 'repurposable' space for the assessment of paediatric patients with mental health conditions is necessary.
- Children are particularly prone to being overwhelmed by the physical environment of an ED. This may be exacerbated by neurodivergence or unique behavioural or sensory needs. Sensory Modulation Interventions (SMI) can assist with the regulation of emotional and physiological arousal caused by the immediate environment.

8.5.3 Older Persons

Older persons have specific requirements for treatment and management in EDs. The effects of frailty, cognitive impairment, delirium, incontinence, fall susceptibility and functional decline need to be purposefully mitigated by environmental and other safeguards. Ideally, this includes the provision of overnight purpose-designed accommodation of accompanying *Whānau*/family or other carers who may also need to act as spokespeople for the patient.^{††} This need is equally applicable to patients experiencing disability or distress, those requiring support due to language and/or cultural needs (rest spaces for Elders and community supporters) and those caring for an infant.

^{††} [Read](#) about carer zones in the clinical services building at Blacktown Hospital, which provide dedicated overnight facilities for carers or relatives. Single adult patient rooms include a visitor lounge that converts to an overnight bed.

A quiet and contemplative space, informed by biophilic design, would be invaluable for end-of-life care for older persons and others who require it.

In planning services for older persons in Australia and Aotearoa New Zealand, the expected exponential growth of ED presentations by older persons must be factored. Compared with 2010, ED presentation projections for 2050 reveal an increase to 242% and 411% in ED presentations by people aged 65–84 and 85+ years respectively.¹⁹ The projected growth in older person presentations will have a disproportionate impact on healthcare systems. While higher than average acuity and complexity is an important contributor to this, susceptibility to hospital acquired complications is a key exacerbating factor in busy environments such as the ED.

Further advice may be found in the ACEM Policy on the Care of Older Persons in the ED.²⁰

8.5.4 Psychological Distress and Behavioural Disturbance

Patients suffering from an acute psychological or psychiatric crisis have unique and complex requirements. An ED should have facilities for the reception, assessment, stabilisation and initial treatment of patients presenting with acute mental health problems (such as a mental health short stay unit).² In order to reduce the stigma associated with mental and behavioural conditions, ACEM recommends a neutral approach to naming areas within the hospital or co-located with the ED for the assessment and treatment of patients in this group. Naming conventions should describe the design of the environment instead of the patient cohort, for example ‘low stimulus room/area.’

For patients who become violent, aggressive or otherwise behaviourally disturbed, a Safe Assessment Room is required for urgent assessment and containment, located in close proximity to police and ambulance entry points and avoiding entry via the ED waiting room. The Safe Assessment Room allows for the privacy and dignity of the patient to be maintained. It should provide an appropriately low stimulus environment and be designed to minimise the risk of injury to the patient, other members of the public and ED staff.

8.6.5 Patients with Infectious Diseases

Effective mitigation of risk requires a collaborative and coordinated approach, in which interventions are implemented in accordance with an agreed hierarchy of control measures.²² Hospitals, EDs and individual staff all have responsibilities to reduce the risk of transmission of infectious diseases. The following principles apply:

- The ED team has access to isolation rooms that meet relevant design standards, equipped with negative ventilation and dedicated bathroom facilities, to allow isolation of patients with suspected contagious illnesses.
- The ED has been designed to intuitively promote correct hand hygiene practices.
- The ED has been designed with optimal ventilation and air filtration systems.
- The ED team has the ability to alter patient flow through the department in situations that may lead to epidemic infections.
- The ED team has the ability to physically ‘close off’ sections within the ED to enable separation of infectious and non-infectious patients, for example by sliding glass doors.²⁸

See also: ACEM Guidelines for Reducing the Spread of Communicable Infectious Disease in the Emergency Department.²⁹

8.6.6 Patients in Mass Casualty or Disaster Situations

ED design should accommodate the capacity to manage mass casualty incidents and disaster situations. Consideration should be given to the ability to implement necessary layout, flow and/or process modifications to mitigate specific event risks.^{23, 24} Key elements to consider are:

- Service capability, for example, isolation spaces, decontamination spaces and real-time data sharing.
- The scalability of clinical and non-clinical spaces to meet surges in demand.
- Threat mitigation strategies.

9. Staff Requirements

9.1 Work Health Safety

All members of the community, including hospital staff, have a right to an environment safe from violence while in the vicinity of the ED and wider hospital.²⁵

ACEM supports 'de-escalation by design,' which is a security concept that creates spaces that are safe, calm and therapeutic, and adapts tenets of Crime Prevention Through Environmental Design (CPTED). The goal of applied CPTED is to prevent crime by designing a physical environment that positively influences human behaviour. ACEM endorses the following principles:²⁶

- **Surveillance.** Design enables 'passive surveillance.'
- **Legibility.** Design allows people to know where they are and how to get where they are going.
- **Territoriality.** Design provides clear and legitimate boundaries between private, semi-private, community group and public space.
- **Ownership of Outcomes.** Design encourages a sense of individual and community ownership of the space.
- **Management.** Design minimises opportunities for damage to property and maximises the ease of regular maintenance.
- **Priority Groups.** Design responds to greater degrees of vulnerability or risk, for example, children, people with disabilities.

9.2 Staff Areas

9.2.1 Facilities for a Healthy Working Environment

The design of an ED must focus on creating a healthy working environment for staff. Non-clinical staff workspaces should ensure that multidisciplinary teams can work together effectively to assess and manage patients in the ED. Furthermore, EDs require dedicated and suitably equipped facilities for formal education, simulation, mentoring, cultural reflection and other training and meetings.

- Well-resourced, multidisciplinary, technically high-functioning administrative clinical support spaces (including meeting rooms) can have a fundamental and positive effect on inter- and intra-team dynamics.
- Training areas may be used by medical, nursing and other staff as well as undergraduates and other students. They should be private with suitable amenities and noise attenuation.
- Amenities should include well-placed staff bases and staff rooms large enough to accommodate the maximum number of possible users at any one time. Staff facilities need to be located separately from clinical areas to promote effective breaks from patient care.
- ED design should provide staff with a choice in terms of how and where work is undertaken. There should be an ability to work in different parts of the ED at standing and sitting staff bases within proximity to patient bedsides.
- Allocation of staff furniture, fixtures and equipment (FFE) requires separate consideration of both clinical (patient-facing) activities and 'back-office' needs. These two functions should not be conflated into a single FTE budget.
- Sufficient offices separate from the clinical-adjacent staff spaces are required for the clinical administrative, research, quality, education and supervision, and professional practice of emergency senior clinical staff in line with the ACEM Quality Framework domains.²⁷

9.2.2 Staff Amenities

The clinical environment is stressful. The ability for staff to have a complete break, prepare and eat a proper meal, shower in modern facilities and access the outdoors and/or meditative relaxation spaces should be intrinsic to ED design. Recreational areas/amenities must be dedicated spaces for relaxation and recuperation and are considered essential for staff morale and functioning. At a minimum, staff require:

- Recreational, dining and prayer spaces that are separate from patients, not used for work meetings and are soundproofed from adjacent meeting rooms.
- Access to dedicated and private sleeping rooms (ED or hospital-based).

- An environment that promotes respite from work-related demands, for example, the purposeful absence of notice boards with statistics, performance and compliance metrics.
- Amenities to store personal items securely, change clothes and attend to personal grooming and hygiene.
- Access to an end of trip (EOT) facilities to support people who walk, cycle, or jog to their destination. They typically include secure bicycle storage, showers, changing rooms, and lockers. These facilities encourage sustainable commuting.
- Workplace facilities for breastfeeding and expression of milk, including a lockable door and lockable refrigerator only accessible to staff who need it.
- Views over or access to outdoor/ garden spaces is particularly important given the duration and nature of ED shift work patterns.

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