Design Considerations and Summary of Evidence:

children’s emergency, inpatient and ambulatory health services
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Introduction

This document is a summary of current evidence regarding design considerations, relating to the physical, visual and auditory environment for children’s emergency, inpatient and ambulatory health services. This includes considerations for co-located children’s and adults services, and mixed emergency services.

An opportunity exists to apply past learnings and current evidence to enhance future health service planning, design and the provision of services. The following evidence has been identified from an investigation of literature and stakeholder input specific and unique to the paediatric built environment and health service context.

The information contained within this document provides overarching direction that aims to address the environmental needs of children and their families in the planning, development and provision of children’s health services. It may need to be updated as more information becomes available. Project teams need to be aware that this material was collected at a point in time and will need to be supplemented with any new evidence and with reference to current policy, standards and guidelines.

Consideration 1: family centred approach to service delivery

An integrated and coordinated approach considering the child, their particular needs and the needs of their family are core to this concept. Information sharing between staff, child and family allow understanding and education of the illness or injury and encourage active participation in making decisions about their health and care. This empowerment and collaboration also facilitates the ability to exercise choice and improves and enhances clinical outcomes for children. The approach applied and supported by design should be respectful of family diversity and responsive to priorities and choices made by families [14, 18, 19, 26, 30].

Consideration 2: workflow and separations

Separating the children’s entrance to emergency services, in addition to separating the children’s triage area, waiting area, acute treatment spaces, inpatient and ambulatory areas will ensure minimal visual and auditory contact with adult patients. This will reduce the risk of child exposure to a potentially negative experience. Equally, this separation will minimise the disturbance of adult patients by distressed or disturbed children [12,15,16,20, 28] (refer to Consideration 4: visibility).

Where separate adolescent wards are not available, flexible alternative solutions may be considered such as grouping adolescents together in a children’s or adult ward with an adolescent recreation space or activities area relevant to adolescents.

Isolation rooms should be provided for the treatment of potentially infectious patients [4, 26]. The type and number of rooms will be determined by current policy, standards, guidelines and a review of individual facility requirements. In an emergency department, these rooms should be in close proximity to triage to allow for immediate isolation of potentially highly infectious patients [2].
Consideration 3: privacy and acoustic control

There is evidence that increased noise levels may increase levels of environmental stress for consumers and staff. Sound control should be designed to minimise transmission of noise between adjacent treatment areas and designated sound attenuated treatment rooms provided for procedures. Ceiling acoustic tiles, absorbent panels, walls, curtains, upholstered furniture and carpets can be used to absorb and soften sounds to provide a less stressful environment for children and their family [3].

Single occupancy rooms provide privacy, isolation capability, as well as capacity for parent live-in (e.g. fold-out bed or recliner chair). A high proportion of single bed rooms may need to be balanced with break out areas to provide opportunities for socialisation in settings where appropriate (refer to Consideration 4 & 5).

Consideration 4: visibility

Clear visual contact provides staff with optimal observation of all patient areas, including waiting areas and play areas, and outpatient, bed and treatment spaces. Nursing staff must be able to oversee or supervise the patients at all times, which in turn allows the child and their family to feel safe and reassured. However, there must be a balance between supervision and the need to protect the privacy and personal dignity of the patients and their family [3] (refer to Consideration 3).

In an emergency service the triage nurse should have good visual contact between the triage area and the children’s waiting area to allow for monitoring of change in patients condition whilst waiting to be assessed by a medical officer.

Consideration 5: child & family friendly environment and provision of play/entertainment

Provision of suitable entertainment areas and play facilities in and around the children’s ambulatory and acute services will facilitate a welcoming and comfortable environment for the patients and family. It will also provide the parent/carer close proximity to the appropriate nurse, separate waiting and lounge areas and beverage/food amenities. While opportunities for socialisation and play require consideration, this should also be balanced with opportunities for solitude and safety (refer to Consideration 3 & 7).

Outdoor areas specific for children will provide areas for safe play, recreation, remedial activities and family visiting [1,9,16,20].

Zoning of the emergency waiting room should be considered in regards to infection control, with segregated, family, small group and entertainment areas included [2]. Provisions of areas for play and socialisation need to be planned with consideration of context and infection control issues. For example, provision of opportunities for child socialisation may not be considered appropriate in high acuity areas such as an emergency department.

Consideration 6: furniture, fittings, equipment and ambience

Age appropriate décor, furniture and artwork will aid in patient distraction while providing a comfortable and reassuring environment for the patient and their family. Durable and cleanable materials used for furniture and fittings will assist to manage the impact of wear and tear which may be higher in this setting.
The therapeutic effects of viewing nature and gardens are well documented to support optimisation of a healing environment. Windows providing an external and pleasant outlook should be included in areas likely to be occupied for any length of time by patients, family/carer or staff.

A parent’s room, baby change facilities and toilets for patients and family/carers should be in close proximity to the children’s service areas and preferentially separate from adult services waiting area.

The need for toilet/change facilities for older disabled children may need to be considered as standard baby change and adult toilets may not provide a suitable nor safe amenity for these children.

[1,6,8,9,11,17,19,20,27,33].

**Consideration 7: ergonomics and safety**

Age and scale appropriate design need to support safety, functionality and visibility of features.

Furniture and fixtures should be designed and selected to anticipate the various needs and demands of each context. For example, bench heights in public areas will need to be considerate of requirements needed for a range of user groups such as adults, children and wheelchair users of all ages.

Hazards should be minimised as much as possible by utilising rounded edges on furniture at low levels, safety glass, barriers, balustrades and low vision door panels. Other considerations include appropriate location or restricted access to power/service outlets, alarms, handles and window heights should all be designed to address physical, safety and security measures for safe guarding children [3].

Strategies to restrict access to staff areas or areas unsafe for children will also need to be considered. For example, staff base and clinical procedure areas should be inaccessible to children and their families when a staff member is not present.

Safety will also need to include design considerations for absconding, abduction and issues surrounding family custody circumstances.

**Consideration 8: space requirements**

Children’s clinical requirements need to consider additional space to accommodate facilities for the family/carer, such as chairs at bedsides, bed/recliners, kitchenette, shower and toilet amenities (with stroller access) and baby changing facilities.

The provision of additional storage areas for age appropriate toys and ambulation equipment in the acute clinical areas should also be considered. The design of consulting and treatment areas must permit parents to remain with their child [21,5,29,32,33].

**Consideration 9: signage and wayfinding**

Wayfinding is the process individuals use to navigate in unfamiliar surroundings. Wayfinding extends beyond signage to include elements of site design, site layout, physical, sensory, cultural and cognitive needs. The strategy implemented in a facility should be consistent and appropriate for the children’s services context as well as a
diverse range of facility visitors and users with differing levels of capacity and ability to engage with the built environment.

The use of graphic and character display is encouraged, keeping in mind all age groups of children, as different age groups each have their own visual prompts which they are drawn to. Techniques must also be considerate of children and adolescents who have learning impairments. [2,4,5].

**Consideration 10: parking and access**

Parking should be provided under or within close range of the emergency department and include both disabled and parents with prams parking bays. The car park should be well lit and protected from the elements and monitored by security personnel or cameras [3].

Mixed (children/adults) emergency services should be on the ground floor for ease of access. They should be close to public transport and adequately signed to ensure ease of wayfinding (refer to Consideration 9).

**Examples of paediatric facility design:**

- Hospital of Pittsburgh of the University of Pittsburgh Medical Center (UPMC) [10]
- Flinders Medical Centre [5]
- Evelina Children's Hospital [27]
- Luke Waites Child Development Center, Dallas [22]
Reference list


17. “How can you keep your young ER patients calm? Staff-originated pediatric space entertains kids.” Patient-Focused Care & Satisfaction 1999; 7(12): 140-141.


27. Reid R, “A healing place.” Civil Engineering Feb 2006; 76 (2); 34-86.


