Designing practices

Using evidence to do better

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The physical layout of general practices has generally been overlooked in research on safety in the health system. This article provides an overview of the evidence that is available on physical design, and the implications of this research for general practice.

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Case study 1

When the receptionist in the practice raised concerns about the rudeness and agitation of some patients who were waiting to see their doctor, Dr Ofili decided to put a television into the waiting room. She had heard that a distraction could reduce the perceived waiting time for patients. She was surprised that the problems got worse, and wondered why.

Case study 2

When Dr Johnson built an extension to his clinic, he decided to build a meeting room in which he could fit all his staff. Over the following 6 months, he noticed that, apart from the monthly meeting for the whole team, it was used only occasionally and then only by a small group. He wondered whether he had made a sound decision by including it.

Research about safety and quality in healthcare has increasingly included an emphasis on processes and outcomes but despite this, physical environment (including equipment, fitting and fixtures, buildings, and the setting) has been largely overlooked as an area of concern.[1] Physical environment is a component of major models that address safety in the health system, and is important for both patients and staff.[2]

Reviewing evidence quality

The physical environment for general practices includes:

- architectural features with relatively permanent characteristics, such as the spatial layout of a clinic, room size and window placement
- interior design features with less permanent elements, such as furnishings, colours and artwork, and
- ambient features such as lighting, noise levels, odours and temperature.[3]

Two recent literature reviews on the relationship of design and health outcomes have used the Cochrane review methodology.[3,4] The earlier review[3] revealed only 30 studies in which the effects of building design were rigorously investigated. We concluded that studies with less rigorous methodology tended to show more positive results than more rigorously controlled trials.

The more recent and broad review[4] found relatively few randomised controlled trials linking specific design features or interventions directly to impact on healthcare outcomes. It reported evidence that design can have a positive impact on:

- patient safety
- other issues important to patients (eg. pain, sleep, stress, privacy, communication)
- staff health and wellbeing (eg. injuries, stress, work effectiveness, and satisfaction).[4]

In 2009, the Australian Commission for Safety and Quality in Health Care (ACSQHC) commissioned a review of existing evidence about strategies to improve safety in primary care.[5] The review sought to identify the main risks to patient safety in primary care, and to identify research about solutions to these risks, and the gaps in the evidence base. The review focused on research on 'active errors' – those that are readily apparent and involve direct human action, and appears to have focused only on research undertaken in

primary care settings. The built environments of primary care were not a focus and were not reflected in the search terms (though neither were they explicitly excluded). It is not surprising, given the limitations of this review, that no strategies focusing on the built environs were identified as improving patient safety.

Looking at broader research

Evidence from less rigorous research establishes reliable patterns of positive impact for some design features. These are generally consistent with predictions based on established knowledge and theory about healthcare outcomes.[3]

There has been relevant research undertaken outside general practice (eg. studies on the impact of noise on safety)[6] but this research is issue specific and unlikely to be found in searches using sector specific terms (eg. general practice or patient) such as that undertaken by the ACSQHC review.

Therefore, an appraisal of the available evidence for design concerning general practice needs to search further than the usual scope of health services research into spheres such as office design, engineering, aviation and retail.

Using the available evidence

Evidence based design is like evidence based healthcare.[7] The process involves identifying the strategies that are more likely to succeed, and this should provide an improved basis for decision making.[8] It is a form of risk management, increasing the likelihood that certain outcomes will occur and that, as far as possible, factors that will have an impact on outcomes have been considered.[9] This process complements situation specific judgments about the appropriate course of action.[8]

The use of available evidence to inform design tends to lag as a result of the structure and culture of the industry and the ability of researchers to provide practical recommendations.[10]

The success of healthcare design usually depends on a range of factors, and there is an increasing interest in understanding 'how and why' interventions work rather than 'if' they work.[11]

Similar to the hierarchy of evidence for clinical decision making, there are also different levels of evidence based design practice:[12]

- Level 1 – interpreting the available evidence for individual patients/projects
- Level 2 – hypothesising about improvement and measuring outcomes
- Level 3 – sharing results with clients, within practices, and through other informal methods, and
- Level 4 – sharing results through a publication process that meets academic standards (of publication).

Case example – a distraction in the waiting area

Distractions while waiting can increase customer satisfaction and decrease perceived waiting time.[13] This was the basis on which Dr Ofili installed a television in the waiting area. However, for the patients the result was that a lack of choice of television program created more stress. This was the finding of a study on blood donors waiting to give blood.[14] In addition, Dr Ofili's waiting area staff had to ask patients to repeat information as the dialogue on the television was interfering with their ability to accurately record information. A study[15] has found that irrelevant narrative speech can reduce accuracy of a serial recall task (eg. taking down a telephone number) by 30% and this interference does not decrease with experience. The answer for Dr Ofili may not be as straightforward as first thought.

Case example – providing meeting rooms

Organisations need to accommodate formal and informal meetings.[16] One mechanism is to provide meeting rooms.[17] However, meetings in individual spaces may continue because people may prefer to interact in individual workspaces, even when other choices are available in semipublic spaces (eg. meeting rooms).[18] This reflects the 'space syntax' or 'sociospatial culture' of the organisation, and may suggest that people do not want to be seen to be 'meeting'. Providing meeting rooms as an alternative to meeting in individual workspaces may be counter to the sociospatial culture and have an adverse effect on informal communication. This was the case for Dr Johnson's clinic, where his team preferred to continue to hold most discussions, including case meetings and student tutorials, in the consultation rooms. The size of 'meetings' and their timing might be usefully analysed. From a quality, efficiency and sustainability viewpoint, it may be better to increase the number of people who cross paths informally, and to facilitate slightly larger meetings in individual workspaces (eg. consulting rooms) rather than to design for formal meeting rooms.

Implications for general practice

Developing a good understanding of the health context and operations of the health service is an essential first stage of the design process. A 'state of the industry' analysis is seen as a beginning point for evidence based design.[12]

Without this knowledge base, solutions are unlikely to be as effective.[19] Design costs are a tiny proportion of the total costs of a building over its lifetime (especially compared with staffing costs).[20] Evidence based design decisions may create efficiencies that have long term cost benefits in addition to improving the safety and quality of the environment. These efficiencies may be small in any one instance, yet cumulative (eg. reducing re-asking of questions in a noisy reception area) or substantial (eg. facilitating new modes of patient care).

Most changes to the physical environment of healthcare settings alter several environmental factors simultaneously, creating confounding variables and making it difficult to disentangle their effect.[4] As with other areas of healthcare where the evidence is limited, it is useful to consult people who have a strong understanding of the evidence, and its strengths and weaknesses.

Occupational health and safety legislation in every Australian state and territory imposes a statutory obligation for architects to ensure, as far as is reasonably practicable, that the facilities they design are safe and without risks to the health of the people using them for the purpose for which they were designed. Thus, architects who are commissioned to design health clinics need to:

- be familiar with the general practice environment
- know the available evidence about design and safety
- use the evidence to inform their designs, and

- actively engage and share the information through professional forums.

Alternatively, general practitioners may need to be willing to fund the additional costs of familiarising an architect with the evidence on safety risks and on reducing them.

General practitioners need to participate in a 'co-design' process – a 'meeting of experts'[21] or 'experience based' design.[22] This process harnesses the 'formal' and 'folk' knowledge of both GPs and architects (and potentially of patients) to improve design decisions,[19] resulting in a form of 'project wisdom' with which the insight of experts is synthesised to create a mutual understanding that results in a better design,[12] or a coalescence of knowledge where the innovation process begins to ignite and take off.[22]

Research has focused more on inpatient acute care facilities than on ambulatory or long term care facilities.[4] The reasons research has been slow to accumulate include:[23]

- the lack of a tradition of research in the profession of architecture
- medical research omitting the role of the physical environment in patient and staff wellbeing
- the difficulty of undertaking research in healthcare settings.

Major investments in primary care health infrastructure, such as the 'super clinics' initiative of the Australian government[24] provide an excellent opportunity for a study of design, and there is an opportunity for practice based research (including 'distributed' or multisite research involving sites across Australia and/or internationally) as design interventions are proposed and implemented.

Summary

- There is a body of evidence relevant to the design of general practices that varies in its subject matter/focus and its quality.
- Although high quality evidence from general practice is particularly sparse, what is available can be augmented by the patterns of positive impact shown in related research.
- As with the use of clinical evidence, the professions (both design and general practice) need to begin the shared journey of purposive application of the evidence.
- The aim should be to apply what is known to the design of general practices through collaborative practice that uses the expertise of all the stakeholders, and where possible to document, share and publish the results.

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