CAN DESIGN MAKE YOU HEALTHIER?

We all intuitively know that the built environment has an effect on how we feel and behave. An emerging field of design is taking this concept one step further by creating buildings that intentionally try to improve our health and wellbeing.

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Evidence-based design (EBD) in building construction involves using credible data during the design process to influence the final visual and functional form. With EBD, practitioners will estimate and quantify the effect a building's appearance and 'feel' will have on an occupant. They then take that quantified information and use it to further inform and refine the design.

Many recent studies have examined how our physical environment can influence wellbeing, promote healing and relieve stress. It is no surprise that the majority of EBD buildings to date are hospitals and healthcare facilities – where personal wellbeing and healing are of great significance. Equally, in hospitals, there is more scope to measure health values and record the influence different designs have on these.

Start with quantified data

What is the quantified information that designers use to develop their design? Generally speaking, the information is a combination of:

- historical data taken from a library of subjective physiological and emotional surveyed responses to a collection of previously built structures
- hard data relating to elements such as space, movement, lighting and ventilation.

The designer's reference information aims to describe how people will feel when they are within a building, as much as it also measures reactions to obvious things such as the lighting levels. While this 'feel' may seem a little abstract, the fact that designers have a wealth of previous studies to draw on makes it all the more scientific.

Evidence-based design in action

Critical thinking is required to develop an appropriate design solution for a specific building; the pool of information will rarely offer a precise fit with a particular building's unique situation.

Importantly, EBD must provide more than just great outcomes for patients or building users. To be successful, it should result in demonstrated improvements in the owner's economic performance, productivity, customer satisfaction and culture. Historically, going the EBD route costs the client more, so clear evidence of a range of positive outcomes is important.

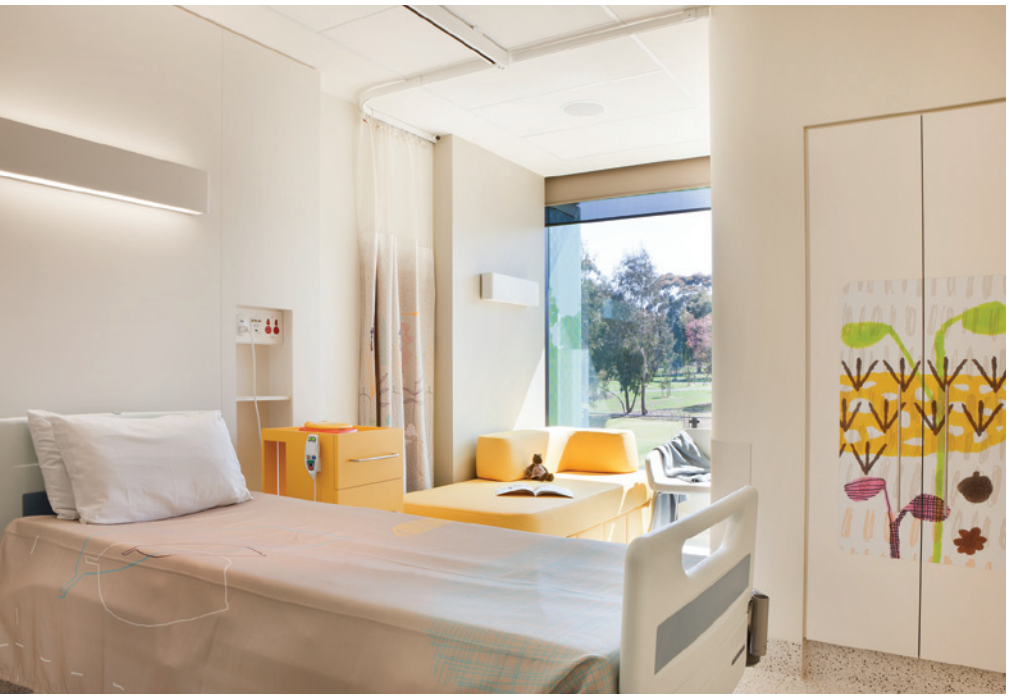
Wellington Hospital redesign

EBD in New Zealand is slowly building momentum. The redesign of Wellington Regional Hospital performed by CCM Architects incorporated EBD. CCM engaged health planners Di Carlo Potts – an Australian firm that specialises in interpreting EBD data and applying it to specific healthcare projects throughout Australasia.

CCM Director Adam Flowers gives an example of how EBD thinking influenced the design: 'One area we focused on was the atrium entranceway to the hospital. Not being an operational area, the revamp of this area was under pressure budget-wise.

'However, we insisted that the space had a significant contribution to the feeling patients, visitors and staff had when they entered the hospital. We drew on guidelines to explain to the client that the area should be kept and developed, specifically to improve user experience.'

Adam says that EBD-thinking is commonplace on a smaller scale in the industry: 'Colour and



Bates Smart Architects used EBD principles in the design of the Royal Children's Hospital in Melbourne. (Photos by Shannon McGrath.)

colour therapy is reasonably well known to improve user experience. There are restrictions placed on what colours can be used where – for example, in healthcare environments, colours need to be sympathic to the skin colour of those who are unwell.'

Wider use in Australia

While EBD is only at the ground level in New Zealand, there is an Australasian database containing guidelines for the design of spaces and operational environments in healthcare facilities. Specialists in health planning such as Di Carlo Potts exist across Australia. As a bridge between architects and clients, these specialist firms focus solely on matching the design brief with current best practice and the latest data from recent projects.

In a recent project in Australia, Bates Smart Architects has designed Stage 1 of the A$1 billion Royal Children's Hospital in Melbourne using EBD principles for the suite of 7-storey buildings, with EBD evident on both large and small elements.

A large-scale example includes extensive glasswork to fill patient rooms and corridors with natural light, and multiple internal gardens and courtyards that help to bring nature inside the building. On a smaller scale, EBD is evident in patient bedrooms. Each room is divided into three zones (clinical, patient and family) in response to the emotional needs of the child, to help enhance patient experience and recovery rates.

EBD measurement tools

While no specific standards exist for EBD in New Zealand, in the US, where EBD is well advanced, a certification and accreditation programme has been developed through the Center for Health Design. This organisation's website holds a library of background research that is used in EBD across the country. They cite approximately 1,200 credible studies with specific environmental relevance to healthcare facilities. For example, studies exist about the psychological effects of lighting, carpeting and noise on critical-care patients.

The information and research that is available on this website includes:

- patient environmental checklists – patients and their families rate existing facilities on a 5-point scale
- patient surveys – a range of questions focus on patients' experiences within existing built environments
- focus group data – where consumers have discussed their needs and ideas for future development
- evidence-based metrics – such as time-measurement studies, design for efficiency (Layout-iQ), and patient and resource workflow (rapid modelling)
- other research data such as direct observation and photography.

Quantifying the return

Building a patient-oriented facility increases the cost of construction, with the extra expense not directly passed on to patients. However, EBD practices, if applied consistently across a healthcare system, could maximise the capital investment in hospitals by producing an on-going return on investment.

Cost savings resulting from faster recovery, reduction in severity of illness, less strain on capacity, faster movement between departments, better staff morale and decreasing staff turnover could create on-going financial benefits. This would make EBD a long-term investment providing a range of positive outcomes, with improved health and wellbeing at the top of the list.

THE HISTORY OF EVIDENCE-BASED DESIGN

The notion of a healing space goes back to ancient Greece; people who were unwell looked to temples in the hope of having dreams in which a god would reveal cures to them.

In 1860, Florence Nightingale fixed ventilation and fresh air as 'the very first canon of nursing' and underlined the importance of quietness, proper lighting, warmth and clean water.

A pioneering study conducted by Roger Ulrich in 1984 found that surgery patients with a view of nature suffered fewer complications, used less pain medication and were discharged sooner than those with views of a brick wall.